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# Railway Age

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SIXTY-NINTH YEAR

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## An Essential Part of the Locomotive

**A**RCHES are written into specifications as a matter of course—just as driving wheels or boiler tubes.

The reason for this is that for the past decade railroad men have been satisfied that Arches

1. Increase steaming capacity, or
2. Save fuel (enough to soon pay for the Arch), and
3. Reduce boiler maintenance by protecting flues and flue sheets.

These same considerations apply to every locomotive on the rails, even those built before the Arch was proven.

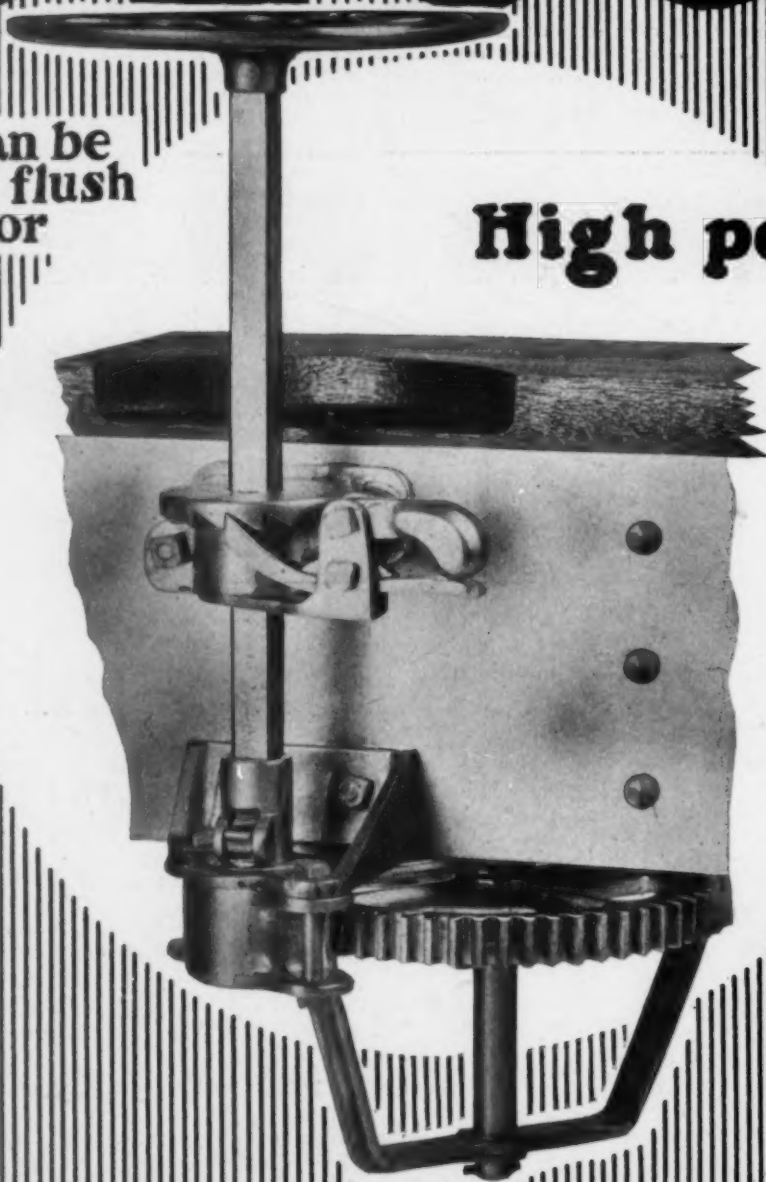
**AMERICAN ARCH COMPANY, Inc.**  
NEW YORK CHICAGO

# Ureco

Wheel can be  
dropped flush  
with floor

High powered

Drop  
Brake  
Shaft



**Union Railway Equipment Co.**  
**McCormick Building**  
**Chicago**



# EDITORIAL

## Railway Age

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It is high time that the railways formed a council of defense. Nowadays no train is safe from grade crossing daredevils armed with motor cars. "Something must be done about it." The interests of self-preservation demand that retaliative measures be taken to remove this menace to innocent cars and locomotives.

### Grade Crossing Desperadoes

Out in the wide-open spaces of the west, where men are men, the situation is particularly alarming. B. B. Greer, vice-president of the Chicago, Milwaukee & St. Paul, shows that eight of this road's trains were recently assaulted by motors, all in a period of two weeks. Every one of these was a flank attack. In one case a Wisconsin driver hurled his car viciously into the fifty-fifth car back of the engine. In football parlance, the line held. Another driver, this time an Illinoisan, resorted to strategy and attacked the train exactly in the middle, far removed from reinforcements. A Missouri driver, who probably decided that the train crew were all up ahead, timed his onslaught so as to pick off the defenseless caboose. Happily he failed. In the other five cases cited by Mr. Greer, the motorists directed their forays at cars presumably light and more vulnerable nearer the locomotive. Such depredations must cease. It is for the railroads to decide whether heavier armoured cars or skirmishers to guard the flanks of the trains are most needed, to defend them from fools who happen, in spite of their folly, to have opportunity to drive automobiles.

The committee on public relations of the Baltimore & Ohio is turning in on itself, as it were; instead of asking the public what the public wants, or studying what the railroad shall say to the public—which might be called the primary function of such a committee—it is just now engaged in improving the internal economy of the railroad.

### An Ounce of Prevention

An all-day meeting has been held at Baltimore, with 300 men in attendance, to stimulate co-operation between this committee and the committees on safety and on preventing damage to freight. Actions speak louder than words; are more important than words. Good relations with the public may be expected to be improved and promoted by good conduct at home, which is what those other committees are striving to promote. The public relations committee, established in April, 1923, is composed of leading officers of the road, as will be seen by the notice, in another column, of the Baltimore meeting. It has established 150 local committees, and these have already given good accounts of themselves. The tone of the addresses and discussions at the meeting is suggested by the title of this note, which is copied from the title page of the committee's report; a homely and time-worn phrase, but one suggesting a salient feature of all of the activities which were under discussion, namely, patience and persistence. The safety committee conserves life and limb, the freight-damage committee conserves money and promotes peace of mind, and under the newly formed tripartite arrangement each of the three committees can see that the other two keep constantly

alert! That public relations work and safety work are not unrelated to each other is indicated by the report of the safety committee that, in five years, 2,185,081 observations have been made at highway crossings. Sixteen percent of these millions of automobile drivers failed to exercise necessary precautions and were written to. Another significant figure is that wherein it appears that in 76½ per cent of the crossing accident on this road, no person was killed or injured. In other words, the number of careless drivers is *four times as great* as the number of cases appearing in the newspapers or in the casualty records.

The usefulness of an existing mechanical interlocking can often be increased considerably by adding a section of electric

### Extend Interlocking Facilities

levers for the control of remote passing track switches, junction switches or, in some cases, the complete operation of another interlocking plant. The Atchison, Topeka & Santa Fe recently completed an addition to a mechanical interlocking at Ellinor, Kan., whereby a set of electric levers controls the switches and signals of a junction 3,000 ft. from the tower. The Chicago, Milwaukee & St. Paul and the Pere Marquette each completed plants within the last year which control train operation at two separate railroad crossings a half-mile apart. The Chicago & North Western recently combined the control of a small plant into the machine of a nearby interlocking, the use of illuminated track diagrams over the machine giving the towerman definite information as to the position of trains, so that the remote location of the tower is of no consequence. The elimination of train stops effected by these improvements is responsible for decided savings in train operation which may be credited to the necessary investment because the increased cost of operation of the plant is slight, due to the fact that no additional towermen are required. There are today a great many opportunities to increase the usefulness of present towermen by minor additions to existing facilities. Extending the usefulness of interlocking is therefore worthy of the consideration of railroad officers.

A railroad shop visitor recently noticed that the master schedule board showed a large amount of delayed boiler work

### "Waiting on Coppers"

with the excuse given, "Waiting on coppers." Inquiry developed the fact that the coppers referred to were the copper ferrules commonly applied between boiler tubes and back tube sheets when new or safe-ended tubes are expanded to fill the tube sheet holes. In the shop referred to the stock of copper ferrules had been exhausted and there were none, at least of the proper size, in the storehouse. Consequently, boiler tubes could not be applied in several of the locomotives and this delayed the boiler tests, also the application of lagging, front end work and a whole train of finishing operations. Such

a situation should not be tolerated. Irrespective of where the responsibility lies, it should be traced and the proper remedies applied. It cost that railroad altogether too much to tie up locomotives in the back shop and lose their service. Moreover, the lack of ferrules, by breaking up the regular schedule of back shop work, was undoubtedly responsible for further waste and inefficiency. The boiler makers who should have been putting in the tubes, and doubtless some of the pipe fitters, jacket men and other shopmen had to work at one-half capacity until the ferrules arrived, after which there was a grand rush almost equally disconcerting. Since copper ferrules are a stock item, the monthly consumption of which at each repair point should be accurately determinable from the stock book, the chances are that the deficiency in the case in question was distinctly up to the stores department. And yet shop managements have been known to report delays due to lack of material when certain uncompleted work was also holding the cars and locomotives out of service. The sole purpose of this editorial is to suggest the obvious fact that both mechanical and stores department men work for the same road. Instead of "passing the buck" as is sometimes done, they can and should co-operate fully. With mutual thoughtfulness, each can lighten the other's work and increase its effectiveness. The general storekeeper has a job of the greatest importance and difficulty in organizing his department and records so as to supply the material needs of the railroads promptly without carrying excessive stocks. The mechanical department can help to this end by giving advance notice of material required for repair programs; by calling attention to parts which have become obsolete; and by studying ways to utilize material which, on account of some change in standards, is no longer suited for the purpose for which it was purchased. When a condition arises which will increase the normal consumption of a given material, don't expect the storekeeper to know it by some occult gift. Tell him in the shop, experience has shown the value of having the local storekeeper or his representative sit in at weekly staff meetings of the mechanical department foremen. This gives a highly desirable point of contact, enabling mutual difficulties and problems to be explained. The first part of these meetings may be devoted to a discussion of material shortages with emphasis always on preventive measures rather than remedies after a shortage has occurred. Material routers in the back shops are also an important aid in keeping track of material movement and in anticipating requirements. In short, every possible effort should be made to prevent tying up a costly railroad plant due to "waiting on coppers" or any other material.

In the past few years the attention of designers of railway motive power has been focused on the necessity for reducing

#### Repairing Alloy Steel Parts

to a minimum the weight of locomotive parts. In this effort, probably the greatest stride has been made toward the lightening of reciprocating and revolving parts. This has been made possible by the use of various alloy steels which have an advantage of added strength as compared with the low carbon steels which have been used for so many years. At a recent local section meeting of the American Society of Steel Treathers at New York, attention was directed to the fact that alloy steel forgings, such as locomotive side rods, may suffer damage, due to reheating during repair work, that robs them of the physical characteristics which are of vital importance to the proper performance of their mechanical functions. This fact is not unknown, but it is possible that its impor-

tance may not be fully realized. It is possible to damage alloy steel forgings, by improper reheating, to such an extent that they do not afterwards possess even as much strength as a carbon steel forging. Lightness and great strength render alloy steel forgings so highly desirable for use in the construction of certain locomotive parts that every railroad shop, making repairs to material of this nature, should have in its personnel men who are thoroughly trained in the repairing of this material and who appreciate the damage which may result from improper treatment while undergoing repairs. In addition to the properly trained personnel, the furnaces for this class of work should be equipped with suitable recording instruments, thus eliminating the factor of guesswork in temperature control.

Frequently in our search for new ideas we overlook the common place. The many uses of whitewash are well known.

#### Whitewash in the Enginehouse

Its use has many advantages, among which is cheapness and the fact that anyone can apply it. The Niagara Falls engine terminal of the Lehigh Valley is an excellent illustration of what can be done through its judicious use. A visitor cannot help but be impressed by the clean and well lighted interiors. A large share of the credit is due to the personal interest and pride taken by the men in the appearance of the plant. When a man is temporarily available he mixes a pail of whitewash and applies it wherever it is needed the most. The supervisory forces have designated what shall be whitewashed and the men govern themselves according to instructions. The interiors of the enginehouse and machine shop have a white coat about one-third of the distance up the walls, as well as around the recessed sections of the walls at the windows. This has been a big factor in making a well-lighted interior to a shop which would otherwise be dark. The psychological effect on the workmen is evident. They like their working environment and take pride in their work. The material and labor consumed costs very little and when considered in proportion to the results achieved, it is a real investment. There is little excuse for dark and gloomy shop interiors.

It has only been within comparatively recent years that the importance of conserving fuel has been given the serious

#### A Sporting Proposition

consideration it deserves. But, since the question of fuel conservation has been aggressively taken up, it is gratifying to observe the consistent progress that has been made in the reduction of the amount of coal used per gross ton-mile and per passenger car-mile. Some individual roads have made records in this respect of which they can be justly proud and the results they have obtained have been due to excellent work on the part of fuel supervisors and locomotive crews. It has been the custom to make a comparison between the operations of different roads by performance in one respect or another, but there is no one attainment in which any road could take such pride, and justly so, as a low fuel consumption record. The November issue of the Pere Marquette Magazine contains a suggestion which is worthy of the attention of every railroad officer. The Pere Marquette has made some enviable fuel performance records in the past and credit for the achievement is given by the management to the efforts of the enginemen and firemen. Quoting from the comment referred to above, "It has been a sporting proposition with



them"; and further, "Since there is a certain element of sportsmanship in the question, it might be possible to stimulate interest further by adopting a recognized principle of sound sportsmanship: the handicap . . . Why not give certain roads a five or six-pound handicap on the 1,000 gross ton-mile haul and make it a real race?" The element of sportsmanship among railroad men is undoubtedly developed to such an extent that a striving for supremacy in a field of so great importance as fuel conservation would instantly appeal to them. The application of the handicap principle to the race for low fuel cost would necessarily have to be made in such a manner that it would take into consideration the variety of operating conditions existing on different roads; but there is no doubt that if some scheme to bring about such a constructive rivalry between the different roads could be established, it would produce results which would surpass the excellent records so far made.

## Significant Labor Developments

THE RECORD which has been made in the still pending controversy between the western railways and the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen presents even more clearly and concretely than it had been presented previously the question whether the method of settling railway labor controversies established by the Transportation Act can be made to work in cases in which it is most necessary that it should work.

The labor provisions of the Act have two purposes. One is to cause labor controversies to be settled without interruptions of transportation. The other is to cause them to be so settled that railway employees will be given wages and working conditions which will be fair to them, to the railway companies and to the public. In their controversy with the western lines the engine service brotherhoods have persistently followed a policy which tends to defeat both of these purposes. The settlement they forced upon the Pacific System of the Southern Pacific last week was a development of unusual significance.

The engine service organizations some months ago avowed and adopted the policy of refusing to appear and participate in hearings before the Railroad Labor Board. They are the only labor organizations which thus far have adopted this policy. Disputes between the railways and all other classes of employees have continued to the present time to be carried to the board. In the recent conferences between the Conference Committee of Managers of the western lines and the representatives of the conductors' and trainmen's unions these unions agreed to submit to the Labor Board any differences between them and the Conference Committee which could not be settled by negotiations. The Conference Committee and the representatives of the conductors and trainmen subsequently succeeded in agreeing that an advance in wages should be made and that certain changes in working rules should be made, while other changes in rules should be submitted to negotiation between the individual lines and their employees.

The Conference Committee of Managers later offered to settle with the enginemen's organizations on the same basis. The officers of these organizations rejected this proposal. They demanded that the advance in wages should be made without any substantial changes in rules. This resulted in a termination of the negotiations and in the Conference Committee asking the Labor Board to take jurisdiction of the dispute.

The Labor Board did so and ordered representatives of

both parties to appear before it and testify. The officers of the enginemen's organizations refused to do this and were then ordered to do so by the United States District Court. The enginemen's organization appealed from the district court to the United States Supreme Court and the case is still pending. Meantime the Railroad Labor Board held hearings and rendered a decision to the effect that the railways should make an advance in wages conditional, however, upon changes being made in working rules. In spite of this decision the engine service brotherhoods demanded that the Southern Pacific should settle on their terms, and on this being declined took a strike vote. Being threatened with an interruption of its service, the Southern Pacific granted the advance in wages without getting the change in rules which the Labor Board had held should be made.

The next and latest move of the Conference Committee of Managers was to appeal to the Labor Board under a provision of the Transportation Act which we believe has never been resorted to before. This provision is to the effect that if a settlement of a dispute is made by a railway and its employees and the board "is of the opinion that the decision involves such an increase in wages or salaries as will be likely to necessitate a substantial readjustment of the rates of any carrier" the board may suspend and, for cause shown, modify such decision. The Conference Committee in its latest petition to the board sets forth reasons why the settlement on the Southern Pacific would tend to necessitate an advance in rates in western territory.

In order that the full significance of this entire series of developments may be understood it is necessary to take into consideration one very important fact. This is that there is only one large group of railway employees that actually can cause serious interruptions of transportation. This group consists of the classes of employees directly engaged in the operation of trains—that is, the engineers, firemen, conductors, trainmen and switchmen. Even a nationwide strike of shop employees cannot actually interrupt transportation, as was signally illustrated in 1922. Since the employees directly concerned with the operation of trains are the only classes that actually can interrupt transportation, it follows that if the labor provisions cannot be given such effect as to prevent strikes by them and as to secure reasonable settlements in disputes regarding their wages and working conditions, then the labor provisions cannot accomplish their purposes.

The engineers' and firemen's organizations have adopted a policy of refusing to comply with the labor provisions, and in doing so have, on the Southern Pacific, gained more by this policy than the conductors' and trainmen's organizations have gained by their more conservative and law abiding policy. If the outcome on other railways should be the same the conductors' and trainmen's organizations undoubtedly would decide that they also have more to gain than to lose by refusing to comply with the law. The result would be that the law would become inoperative with respect to employees engaged in engine and train service.

If that should be the outcome the present labor provisions of the Transportation Act would become practically valueless to the railways and the public. It is probable the railways would gain rather than lose by being left free to deal with other classes of employees without the possibility of intervention by the Labor Board. The apparent determination of the engine service organizations, is, regardless of the Transportation Act, to make the settlement of wages and working conditions a test of economic power. Now, the engine and train service organizations may have more economic power than the railways, but the railways have more economic power than other classes of employees. If economic power alone is to determine the settlement of controversies between the railways and the engine and train service organizations

why ought not economic power to be made the sole arbiter in the determination of disputes between the railways and other classes of their employees?

The policy the engine service unions are following probably is going to present very directly to Congress and the public the question whether it is expedient to repeal the labor provisions of the Transportation Act and leave the railways and all classes of their employees free to fight out in strikes and lock-outs disputes that may arise between them, or to so strengthen the labor provisions as to compel the engine and train service organizations to settle controversies between them and the railways by peaceful methods.

## Are Exceptions Ever Justified?

EVERYONE who has been concerned with the problem of routing new equipment or a load of unusual dimension over the eastern railroads is afforded a keen insight into one of the perplexing problems with which the older railroads of this country are confronted, namely, the restricted clearance between equipment and the outlines of tunnels, bridges and track-side buildings. Built at a time when dimensions of present day equipment were undreamed of, these structures impose a restriction on further increases in the size of locomotives and cars that can be removed only at enormous expense and it is with a knowledge of these conditions that the railroads are now providing far more generous dimensions for the so-called clearance diagrams which govern the design of tunnels and other structures that restrict the space available for equipment and loads.

However, even today the question of the clearance between structures and equipment is not on an entirely satisfactory basis for the reason that the designers of equipment seemingly take advantage of every increase in the limits of clearance diagrams to increase the dimensions of locomotives and cars. For this reason the tendency of the designer of structures is to provide even greater side and vertical clearances in the new structures than those demanded by prevailing structure limit diagrams, and in such work as the replacing of the timber linings of tunnels with concrete enormous expense is constantly being incurred in the enlargement of the tunnel sections.

As regards lateral clearance there can be little question, for this concerns the clear space between the sides of cars and the walls of the tunnel, but with respect to vertical headroom the pertinent consideration is not one of the space between the moving and fixed structures but of the height necessary to insure safety to a man standing on top of the highest car. But even as regards this phase of the problem it must be said that the practice has long been established that fixed structures should provide adequate headroom to fulfill the requirement of safety. Furthermore, the thought of making an exception of the structure in which the extra height can be obtained only at a measurable sacrifice of other considerations or at considerable additional outlay receives scant consideration because of the fact that overhead structures are encountered so frequently in the movement of trains over a line of railway.

Railway engineers have, therefore, given little thought to reductions of clearance to meet special conditions outside of the congested terminals. The established vertical headroom has been considered the standard which must be observed in all cases. However, this very question was raised seriously in connection with the design of one railroad tunnel of considerably more than the ordinary length. The justification of the extra expense necessary to provide a tunnel section that would insure safety to a man on top of the car approaching the tunnel by providing the necessary headroom seemed open to serious doubt and it was felt

that the structure was so unusual as to present an entirely different problem from that offered by the short tunnels, or overhead or through bridges scattered throughout the length of the property. It is not the thought that an attempt to answer this question should be made here, nor that it is necessary to offer any general principles upon which the decision should be founded, but to suggest that there would appear to be cases that call for serious study before proceeding with a strict adherence to the so-called established standards. Perhaps in their anxiety to avoid any possibility of a duplication of the unfortunate conditions which now obtain on some of our older railroads, the managements of the newer lines have erred on the side of too generous provision for future development.

## The Gooding Bill

ONE of the most dangerous bills for the regulation of rates ever introduced in Congress is the bill introduced by Senator Gooding of Idaho to amend the Fourth Section—that is, the long and short haul section—of the Interstate Commerce Act. This bill was introduced at the last session and undoubtedly will be pressed for passage during the present session. To persons who are unfamiliar with railway rate structures and the necessity of making them conform to commercial and transportation conditions it is likely to look like a fair measure. This is what makes it dangerous.

The existing Fourth Section, in substance, prohibits railways from making lower rates for longer than for shorter hauls without the approval of the Interstate Commerce Commission. The Gooding bill would, in effect, altogether prohibit the making of lower rates for longer than for shorter hauls. In other words, it would deprive the Interstate Commerce Commission of all discretionary authority to let lower rates be made for longer than for shorter hauls even when the Commission after investigation and hearings had decided that in the particular circumstances it was in the public interest that this should be done.

The Interstate Commerce Commission was created by Congress and has been given by it the power to regulate the financing, the operation and the rates of all the railways in the United States. This is a very great power. If the Commission is capable of exercising it, it surely must be capable of exercising the more limited power of determining whether and in what circumstances it is in the public interest for railways to make lower rates for longer than for shorter hauls. The Gooding bill, however, and those who advocate its passage deny that the Commission is competent to determine whether, and if so in what circumstances, it is in the public interest for departure to be made from the long and short haul principle in rate-making. Those who would thus limit the Commission's authority cannot logically maintain that it is fit to perform the broader and more important duties delegated to it.

The real reason why such legislation as the Gooding bill is being advocated is that the Interstate Commerce Commission, with the broad and detailed knowledge of business and transportation conditions which it has derived from its years of study and work, does not administer the long and short haul section as certain persons who are ignorant of all the conditions with which it has to deal and who are prejudiced by their local environment, believe that it should. The problems presented in the regulation of rates in the territory west of the Mississippi river are made extremely difficult and complicated by the competition of ships passing through the Panama canal with the transcontinental railways for traffic to and from the Pacific coast. The steamship lines make lower rates to the Pacific coast than the railways can make to the coast if the railways are to be required to make as low



rates to intermediate points, such as Spokane and Salt Lake City, as they make to the coast. The railways do not actually "make" the lower rates to the Pacific coast. They are made by the steam ship lines. The railways seek opportunity to meet the rates of the steamship lines to the coast without correspondingly reducing their rates to intermediate points. The business men at the intermediate points claim this is "unfair discrimination." The purpose of Senator Gooding's bill is to make it forever impossible for the railways to make low rates to the coast without making equally low rates to the intermediate points. If this purpose is accomplished the railways will be prohibited from meeting water competition because they cannot afford to make low enough rates to meet water competition on the coast and equally low rates to the intermediate points.

If, however, an absolute long and short haul measure, such as the Gooding bill, is passed it will not only be disastrous to the transcontinental lines and the territory they serve, but will also cause disturbances in rate adjustments and business conditions in almost every part of the United States. The Interstate Commerce Commission on March 19 transmitted to the Senate Committee on Interstate Commerce a long letter strongly opposing the passage of the Gooding bill and setting forth in detail why its passage would do great and widespread harm. Regarding the effects the bill would produce the Commission said:

"The effect of such a wholesale revision (of rates) upon the business of the country would undoubtedly be disturbing and cause general unsettlement. Every industry in the country would be caught in the turmoil and the relationship of rates, so important a consideration to all producers, manufacturers and other shippers, would be thrown into such confusion and uncertainty as to arrest the commerce of the United States, both domestic and foreign. There is nothing in the situation of any particular section of the country which could possibly warrant such profound disturbance of the commerce of this country."

This statement of the Commission was made particularly with reference to the provision of the Gooding bill that all the changes in the rates made necessary by it should be made within six months, but it is equally applicable to the effects that would be produced by the passage of the bill regardless of how long a time was allowed for the necessary readjustment of rates. As the Commission said about the general proposal to prohibit the charging of a lower rate for a longer than for a shorter haul, "the effect of such a provision upon commerce, industry and agriculture would be revolutionary and in many cases disastrous to carriers, shippers and communities."

It is surely an astonishing thing that the Congress of the United States should continue to give any serious consideration whatever to such a bill after having received such a warning from the highest regulating authority in the country—an authority created by Congress itself because Congress believed that it would be more competent than any other kind of tribunal to determine the vastly difficult and important questions involved in the regulation of railway rates.

## New Books

*Proceedings of The American Association of Railroad Superintendents.* Edited by J. Rothschild, secretary, Room 400, Union Station, St. Louis, Mo. 294 pages, 6 in. by 9 in. Bound in paper. Published by the association.

This volume contains the proceedings of the thirty-first annual meeting which was held at the Hotel Statler, Buffalo, N. Y., on June 18-20, 1924. It contains reports on a number of important subjects, including the proper classi-

fication of freight trains to avoid intermediate and terminal switching, maximum train loads, the improvement of efficiency in terminals, the economical operation of work trains, the maintenance of manifest and time freight schedules, loading equipment to maximum capacity, the elimination of train and yard accidents, the exclusive use of the 19 order, a constructive review of the grade crossing problem, the elimination of personal injuries, long engine runs, how transportation officers may best improve relations between the railroads and the public, eliminating the killing of live stock and maximum miles per car per day. The discussion of these reports on the floor of the convention was unusually practical and is presented in this volume of proceedings with the reports. These proceedings contain a large amount of information of value to every railway operating officer.

## Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

### Books and Pamphlets

*The Design of Railway Location*, by Clement C. Williams. 2d rev. ed. 524 p. Pub. by John Wiley, New York. \$4.00.

*The Norfolk & Western Railway—A List of References.* Material in 30 libraries included. 52 mimeo. p. Issued by Library, Bureau of Railway Economics, Washington, D. C. Apply.

*Protection of Small Water Supplies Used by Railroads*, by O. E. Brownell. Reprint No. 952 from U. S. Pub. Health Reports. 10 p. Pub. by Govt. Print. Off., Washington, 5 cents.

*Railway Electrification*, by Harry F. Trewman. Economic and financial aspects of different systems. 251 p. Pub. by Sir I. Pitman, New York. \$7.50.

*Train Rules: With Car Lighting and Heating*, edited by J. W. Harding and G. E. Collingwood. Various pages. Pub. by International Text-Book Co., Scranton, Pa. \$4.50.

### Periodical Articles

*The Attempt to Establish the Eight-Hour Day by International Action*, by Herbert Feis. Part II. Part I was included in the list of Sept. 27, 1924. Political Science Quarterly, Dec., 1924, p. 624-649.

*Do Not Miss Seeing the Solar Eclipse*, by Prof. Henry N. Russell. The American Astronomical Society asks co-operation of railroads in running through or special trains to New York and New England on Jan. 24, 1925. Scientific American, Jan., 1925, p. 13.

*The Man Behind the Man Behind the Throttle*, by Robt. H. Denehey. Train dispatchers, and others, and C. J. Welsh of the Pennsylvania in particular. American Magazine, Dec., 1924, p. 12-14, 91-92.

*New Bridge Saves Time.* Includes map and photograph of Castleton Cut-Off. Scientific American, Jan., 1925, p. 23.

*The Railroad Miracle of the Southwest. Group of Weak Roads Welded into Strong System.* Map of Missouri Pacific System, p. 7. Barron's Dec. 22, 1924, p. 3, 6-7.

*Steel Rails*, by C. B. Bronson. An historical outline of progress in design, details of manufacture and requirements of present-day. Engineering Journal [Canada]. December, 1924, p. 703-713.

## Letters to the Editor

### A Prior Claim for Heavier Rails

PHILADELPHIA, Pa.

TO THE EDITOR:

My attention has been called to the article published in the *Railway Age* of September 27, page 533, entitled "Does Heavier Rail Justify Fewer Ties." This article in general expresses my views. However, I note the following statement: "The Lehigh Valley can be credited with being a pioneer in the use of very heavy rail sections; its 136-lb. rail section was designed in 1915 and first laid in 1916, over eight years ago." I am inclined to dispute this claim for the reason that we designed and adopted a standard on July 23, 1914, for a rail weighing 125-lb. per yard, and in April, 1916, we increased the section to 130-lb. per yard, which section we have been using since that time. Eighty-five per cent of our main line between New York and Pittsburgh is laid with 125-lb. and 130-lb. rail in the proportion of 146,000 tons of 125-lb rail and 575,000 tons of 130-lb. rail.

A. C. SHAND

Chief Engineer, Pennsylvania Railroad System.

### Operating Men Should Study Weather Conditions

KENTVILLE, N. S.

TO THE EDITOR:

All railroad men know what an important bearing weather and its changes have on their work, particularly the men on the operating staffs who are stationed in northern climates, and who, by the nature of their work, come into direct contact with it. Few realize, however, how very interesting it is to watch the weather closely by means of a few simple weather instruments, or how greatly one's efficiency can be increased by keeping in touch with coming changes.

With an Aneroid barometer, a thermometer and a weather vane, it is comparatively easy to foretell nearly all coming local changes within 24 hours.

These instruments can be purchased at a reasonable cost from any good instrument maker, and many books and pamphlets are available, explaining how to use them. The Taylor Instrument Company, Rochester, N. Y., is a specialist in weather instruments, and publishes a number of such books, and in addition furnishes a chart or key to barometer reading, which is most ingenious and infallible if carefully interpreted. By plotting a chart showing the daily rise and fall of the barometer, and marking thereon temperatures and direction of winds, an investment of five minutes a day will bring surprising returns.

When they are properly supplemented by newspaper and telegraphic reports always available to the railway man, they will enable him to have such an accurate knowledge of local conditions as to be definitely able to plan his work accordingly. In combating a snow storm, sending out work trains or planning any work in which weather is a factor, such knowledge is really indispensable, and removes the element of uncertainty very effectually and greatly increases a man's interest in his work.

Every chief dispatcher's office should be furnished with such a weather bureau. Knowledge of coming weather changes will avoid delays, save overtime, save fuel, eliminate nervousness during the snow fighting and freshet seasons, re-

duce claims for goods damaged by weather, and prevent lost time with work trains, besides affecting many other minor details too numerous to mention. A dispatcher handling trains should be as well posted on weather conditions as the captain of a ship.

D. L. DERROM

### Suffering from Stratification

NEW YORK.

TO THE EDITOR:

In November, 1923, you published an article by me on the subject of self-propelled cars, which caused much public comment and brought a large amount of correspondence. The sub-title of the article was "To do Nothing at all is Frequently the Worst Mistake but it is a Mistake which the Management Cannot Definitely Fix on any One Department."

There are many other phases of the railway business which are suffering from stratification because the heads of many departments are fearful they might make a mistake if they take a definite stand for any change. There is always the feeling they may be blamed in case the change is not successful, while they would not get the desired praise in case their suggestions are adopted.

Outside engineers, not connected with the railroad profession, find much fault with the engineering department of railways which they blame for lack of progressiveness. It is claimed that the development of the locomotive has been held back rather than accelerated by the great number of railway engineering departments which are not only stationary but in many cases truculent towards any change suggested by outsiders.

In many respects much more progress has been made by the interurban railways than by the steam railroads. Could anything be more Victorian in every way than the stratified design of the parlor cars used especially on the railways of the East? I actually know of people, who wanting to discuss business matters while traveling and not caring to ride in the smoking car, prefer to travel in a day coach. The interurban lines have parlor cars with lighter and more comfortable seats in which people can converse with each other without straining their necks and voices. More seats are thus put into the cars, which are also considerably lighter. In other words, the interurban lines with less weight have a greater seating capacity and are much more comfortable to ride in.

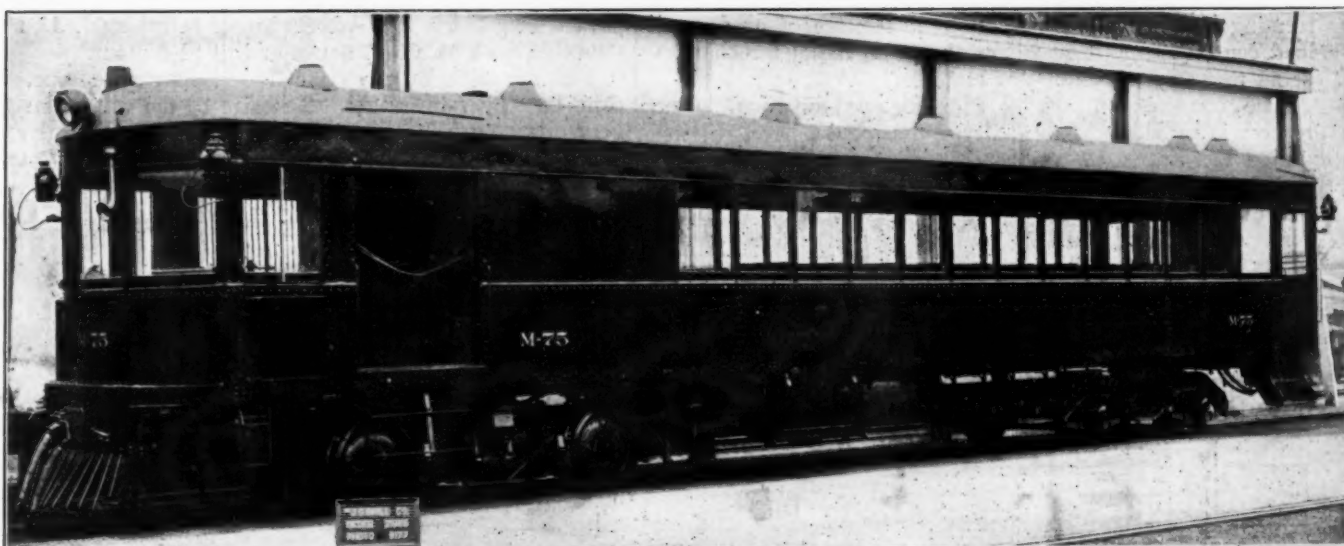
Attention is just commencing to be given by the more progressive lines to the matter of handling local freight which heretofore was handled on in an early Victorian manner.

Railway men have known right along they were losing money on nearly every parcel which passed through the local freight station, but somehow they seem to take the attitude of the old lady who said she lost money on every pair of stockings she knitted but that she made it up in the quantity.

A number of very successful ex-railroad men are being called upon nowadays by industrial concerns to make a special study of the cost of production. It might be very desirable if this process were reversed and if some of the railway companies were to call in successful manufacturers to make a survey of the railroad companies' problems and especially of the personnel of some of the stratified departments where frequently men have become heads of departments by the seniority rule rather than as a reward of merit. A study of the organization of some of the most successful manufacturing establishments compared with that of some of our large railroads might be quite interesting and illuminating.

F. J. LISMAN.





The Brill Model 75 Motor Car—Length, 55 ft.; Weight, 53,000 lb.

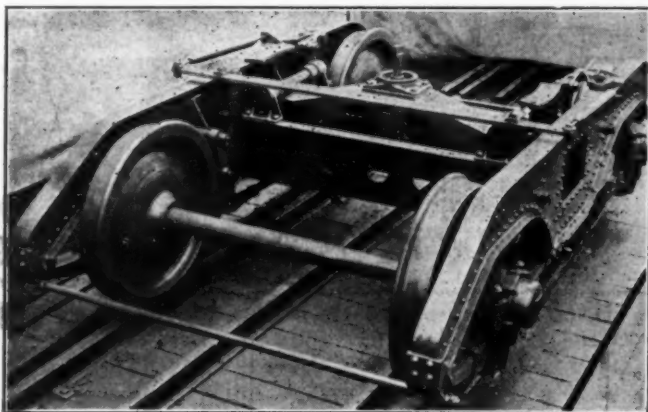
## Brill Builds Large Rail Motor Car

Seats 59 Passengers and Is Designed to Haul a Trailer  
Seating 60 Additional Persons

**F**OLLOWING THE TREND toward more power and greater carrying capacity in equipment of this class, the J. G. Brill Company, Philadelphia, Pa., has designed and built a large gasoline-motor-driven passenger coach designated as its Model 75, which has a maximum seating

carried through the bolster and a shaft drive is taken off from the rear end for the operation of the air compressor for the Westinghouse air brakes. The lower of the two projecting shafts is connected at each end with a driving shaft leading to the gear case of the adjoining axle. This construction has materially reduced the normal angularity of the driving shaft from the engine and has practically eliminated the angularity from the shafts leading from the transmission to the axles.

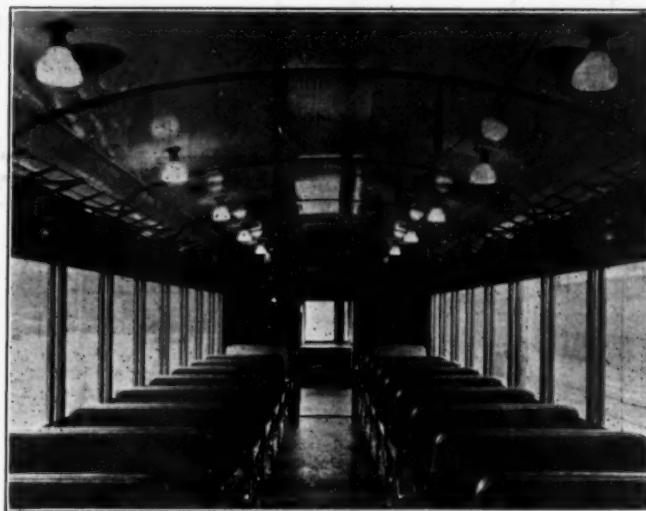
This transmission provides five speed ratios, two of which



The Trailer Truck

capacity of 59 and will haul a trailer with an additional seating capacity of 60. The car is driven by a six-cylinder motor which develops 190 hp. at 1,300 r.p.m., the power from which is carried through a transmission of unique design to both axles of the forward truck. The motor itself is mounted at the forward end of the car body.

The transmission is of the drop shaft type. It was specially designed to take care of the powerful motor with which the car is equipped and is particularly noteworthy because of the fact that it is built into the bolster of the forward truck. One of the illustrations shows this bolster removed from the truck. The driving shaft from the engine is coupled through suitable universal and slip joints to the upper part of the two projecting shafts. This shaft is



Interior of the Coach, Looking Toward the Baggage Room

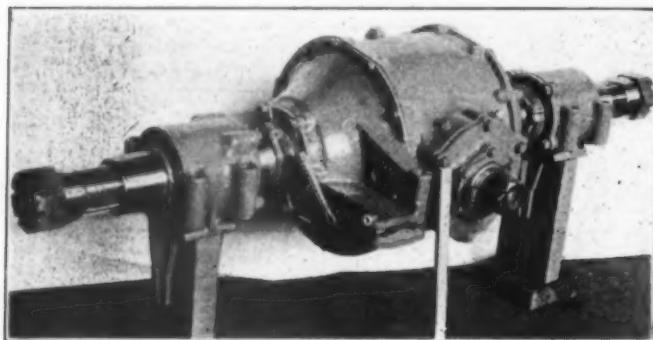
involve the use of a countershaft which is located at one side of the transmission output shaft. These two speeds are used only in starting and accelerating the car. For the remaining three speeds, the countershaft is idle and, as they operate at the same efficiency, each may be used as a

running speed, according to the requirements of grade and load conditions. All gears are always in mesh, the changes being made by means of jaw clutches.

The transmission always runs in one direction. The reverse is provided in the axle gear case, the bevel driving pinion meshing with two bevel gears, one or the other of which is connected to the shaft by a double clutch. The car may thus be operated with equal efficiency in either direction. The connections from the gear shift and reverse levers have been so designed that they compensate for the angular movement of trucks on curves.

Both power and trailer trucks are generally similar in design. In the power truck, however, the side frames and journal boxes have been placed inside the wheels, while in the trailer truck they have been placed outside the wheels.

The side frames of both trucks are built up of double



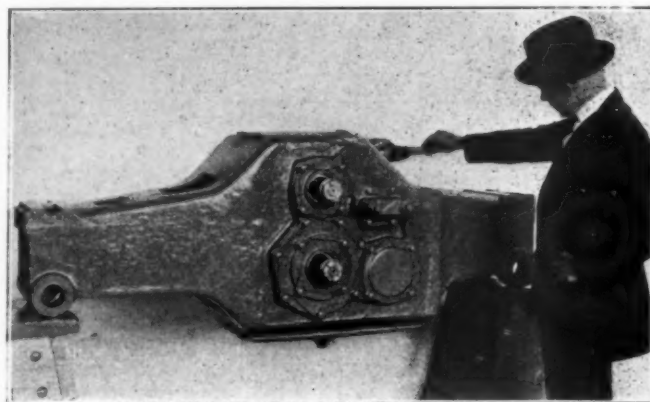
One of the Axle Gear Cases, with the Torsion Spring Seat, Showing at the Left Side

plates with the T-section flanges and the fillers and stiffeners riveted between them. The axle suspension follows automotive practice in that the journal boxes are secured directly to the centers of the semi-elliptic springs. The bolsters of both trucks are supported on swing links.

The driving wheels are not pressed on the axles, but are

packed in grease. The wheels are of rolled steel, 33 in. in diameter, with M. C. B. flange and tread contour.

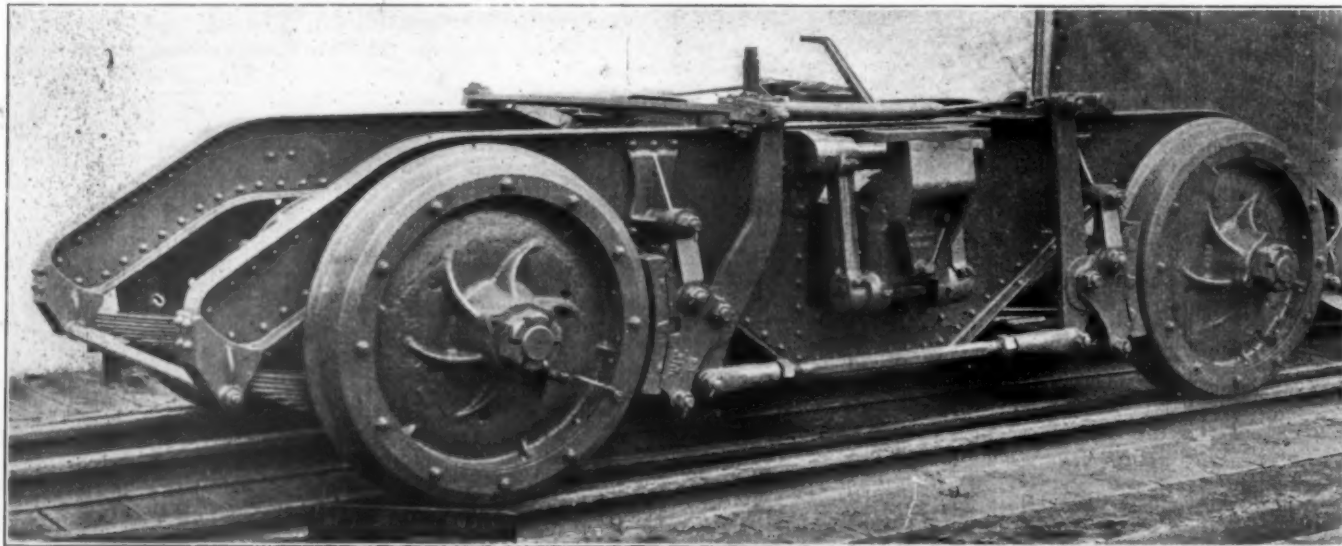
The motor is of the six-cylinder, four-cycle type, with 6-in. bore by 7-in. stroke. The size of the valves has been kept down by using two intake and two exhaust valves for each cylinder. The horsepower ranges from 75 at 500 r.p.m. to 150 at 1,000 r.p.m.; 190 at 1,300 r.p.m., and



The Driving Truck Bolster—The Figure Is Touching the Gear Shift Arm

about 206 at 1,500 r.p.m. The engine drives through a multi-disk clutch of large diameter, fitted with a clutch brake which facilitates bringing the heavy revolving parts into proper speed relationship for easy operation of the gear shift. This clutch, the propeller shafts, the transmission and the axle gear housing, while developed along the lines of automotive practice, are of special designs larger than stock types in which bearing loads and working stresses have been kept low, to take care of the heavy power transmission with a minimum of maintenance.

The engine is fitted with a starting motor operating through a Bendix drive and a 12-volt generator of 1,000 watts capacity, with a battery of ample capacity. The car-



The Driving Truck, with Inside Journals

secured by means of two split taper collets which are clamped between the wheel fit and the axle when the holding nut is drawn up. The torque is delivered to the wheels through a spline connection between the inner ends of the collets. This arrangement permits the wheels to be removed readily with a special puller when the removal of the axle from its gear case becomes necessary. The axles are of heat treated alloy steel and are fitted with Timken taper roller bearings

buretors, ignition systems and vacuum gasoline feeds are all in duplicate. All mechanical equipment involved in the driving of the car is included as a part either of the motor unit or the driving truck. Either or both of these units may be removed from the car and replaced within the duration of an ordinary lay-over period.

The car body is built to dimensions which closely conform to those of a standard steam passenger equipment. The



principal underframing members are two 10-in. channel center sills which extend the entire length of the car body. The body structure includes a frame of light T-section posts to which are riveted the outside steel side sheets and letter board. Carlines of sections similar to the posts support the roof. The car body has a total length over ends of 55 ft. The baggage compartment, including the hood for the engine, is 16 ft. 3 in. The passenger compartment is approximately 34 ft. long and the rear vestibule is approximately 4 ft. long inside at the center. Access to the baggage room is obtained through 4-ft. door openings on either side of the car and the vestibule doors have a clear opening of 2 ft. 5½ in. The vestibule is entered by means of four steps on either side, the openings over which are closed by Edwards trap doors. The seats in the passenger compartment are furnished by the builder of the car. They are of the stationary type for two passengers each and have aisle arm rests. This arrangement, with the inside width of 9 ft. 2 in. gives a clear aisle space of 30 in., which is large enough to permit the use of seats wide enough for three passengers on one side and two passengers on the other by using a type from which the aisle arm rests are omitted. The car is fitted with continuous parcel racks on each side of the passenger compartment and with 12 electric lights, drawing from the

storage battery, mounted on the ceiling, 6 along either side of the car. A saloon at the rear end is fitted with a dry hopper and a Giessel drinking water cooler. The car is heated by a Peter Smith hot water heater installed at one side of the rear end of the baggage room. The front end is fitted with a light coupler of standard M. C. B. contour and the rear with a similar coupler and light spring draft gear. Complete, the car weighs 53,000 lb.

On a trial trip recently made with this car, it demonstrated its ability, without trailer, to accelerate up to 25 miles an hour at the rate of one mile per hour per second. Operating at the recommended engine speed of 1,300 r.p.m., the car develops a speed of approximately 59 miles an hour in high gear, 49 miles an hour in second gear, and approximately 24 miles an hour in third gear. As these three speeds are all direct drive, they are equally available for running and permit the handling of a trailer at the lower speed on grades a little steeper than 1¾ per cent. Without the trailer it is calculated that the engine will be capable of maintaining the maximum speed in high gear on grades up to approximately one per cent and that it will maintain the lowest of the three direct drive speeds on grades of considerably over three per cent. The maximum speed may be maintained with a trailer, on a level or very light grades.

## Boston & Maine Reorganization Proposed

### Abandonment of 1,000 Miles of Line, Readjustment of Finances and Rehabilitation Suggested

ONE OF THE MOST far reaching plans for railway rehabilitation ever offered is contained in suggestions made by Homer Loring, chairman of the executive committee of the Boston & Maine, in a letter to the voting trustees of preferred shareholders of that road. Mr. Loring, formerly chairman of the board of trustees operating for the state of Massachusetts the Eastern Massachusetts Railway Company, was chosen chairman of the executive committee of the Boston & Maine primarily at the instance of the preferred shareholders of the latter property. He was asked to make a study of the road's problems, and to offer suggestions for remedy.

The striking feature of the plan as outlined in Mr. Loring's letter is a proposal to discontinue approximately 1,000 miles of worthless line, thereby reducing the mileage of the system from 2,450 to only 1,450. He then suggests that the mileage remaining be put in condition for more economical and efficient operation, and that the extensive terminals at Boston be rearranged for economy of operation and better service. Finally, he proposes a plan of financial reorganization, if possible, without foreclosure, whereby the property will be put in position to raise the funds necessary for the desired rehabilitation. Included in the plan is a suggestion that the United States government be asked to accept a lower interest rate on the large sums which the road at present owes to the government.

Mr. Loring outlines the details of his plan as follows:

The Boston & Maine Railroad comprises 2,450 miles of road and is a consolidation of 77 railway lines built from 1833 to 1900. The construction of much of this mileage was justified by sound transportation needs; some was projected through competition or to sell to existing lines, and a considerable part was built into sparsely settled sections at a time when it was believed that a railroad running anywhere would pay.

#### Discontinued Lines

For years these branch lines had a monopoly of the transportation of the small communities served. Operating costs were low and the load on the whole system was not serious. The last few

years have changed this situation. The automobile, motor bus and motor truck have taken a large part of the always meager traffic, and standardized wages and hours have added enormously to the operating costs. The time has come when the increasing losses from these poor lines must be stopped. The rest of the system can bear the burden no longer. A freight traffic analysis shows that of the 2,450 miles of railroad, 45 per cent, or more than 1,000 miles, handles only 3 per cent of the business. If the remaining 1,450 miles had large earning capacity the situation would not be so serious. But only 600 miles of the Boston & Maine has freight traffic density equal to the average of the other railroads in the so-called eastern rate group; and this limited mileage cannot sustain so large a proportion of losing road.

#### Motor Truck Service

Application has been made to the Interstate Commerce Commission for permission to discontinue 131 miles on which the annual losses are in excess of \$250,000. Other applications will follow until the system has been reduced to the amount of branch mileage which can be supported without imperiling rates, service, or credit. It is believed that on the lines to be discontinued the transition from railroad to motor vehicles will be accomplished without unfavorably affecting the communities and small industries served. The Boston & Maine Transportation Company has been organized to assist with motor service.

When the proposed discontinuance program is completed the Boston & Maine will have a system of some 1,200 to 1,500 miles capable of giving good service at reasonable rates and with low operating costs. It will then be not only advisable but profitable to spend some money on the property. New money at reasonable rates is not to be had, of course, in the present state of the road's credit, but if it can be procured by a reorganization it can be invested to great advantage.

#### Improvements

Since it is evident that the road must depend for its profits on some 600 to 800 miles of main lines, it is of major importance that these lines should be put in first-class condition. This requires more passing tracks, some grade reductions, heavier locomotives and the resulting changes in bridges, turntables and engine houses; possible electrification, etc. Today the heaviest locomotives owned by the company can be operated only on one division, from Rotterdam Junction, N. Y., to East Deerfield, Mass.

It is probable that within a few years cheap power will be available in central and western Massachusetts. The Hoosac Tunnel was electrified in 1911. Preliminary reports indicate substantial

savings from further electrification. The main line of the Boston & Maine handles a very large freight business into New England and should be afforded every modern facility which can be used with profit.

The real estate comprising our Boston freight and passenger terminals is assessed for \$33,000,000, on which \$900,000 taxes are paid annually. This gives some idea of the high cost of railroad service in a large city. These terminals have grown piecemeal by consolidations of the Fitchburg, Eastern, Boston & Lowell and Boston & Maine companies. They are badly arranged, inefficient to operate and very expensive to maintain. A terminal study is in progress which it is believed will make it possible to release a large amount of valuable property for industrial purposes, improve service and effect substantial operating and maintenance savings.

To be successful, the Boston & Maine must be financially as well as physically sound. To discontinue losing lines will be only a partial remedy. Credit must be restored. The 1918 reorganization was based on the expectation that within a few years the company would be able to sell bonds at reasonable prices to meet the heavy maturities commencing in 1925. Unfortunately many unforeseen and unavoidable difficulties have prevented. Issues of \$4,660,000 bonds fall due in 1925—\$10,500,000 in 1926—\$5,075,000 in 1927—\$3,850,000 in 1928 and \$40,000,000 in 1929. So long as large maturities are impending the road cannot have satisfactory credit.

In addition to these maturities it is estimated that from \$20,000,000 to \$30,000,000 will be required for improvements during the next five years. The Boston Terminals alone will need an expenditure of several millions. The road should be placed in a position to undertake all such improvements as will return large interest through additional revenues or reduced operating costs.

Net earnings have shown considerable improvement for the last six months and a surplus for the calendar year over fixed charges, sinking funds and equipment installments, of \$700,000 is probable. Increased divisions and reduced losses from branch lines should add to surplus earnings during 1925; but so long as all earnings must be expended on the property, no dividends can be paid. Indeed, it seems clear that unless some plan such as is outlined in this letter can be carried out there is no prospect of dividends on any of the present classes of stock for many years to come.

It seems a favorable time for bondholders and stockholders to face the situation squarely and with optimism, and join in effecting a readjustment which will restore credit, provide needed funds, and place the company in a position to distribute its net earnings to the security owners. After consulting with general bondholders, representatives of the United States Government and large stockholders of all classes, the following readjustment plan has been prepared and is submitted for your consideration:

It is proposed to make this adjustment through the present corporation, or, if necessary, to organize a new corporation, to acquire, if possible without foreclosure, the property of the Boston & Maine Railroad.

The company to issue \$125,000,000 general mortgage bonds. This is the approximate amount of direct obligations of the present company. There will be placed on the railway a prior lien mortgage to secure bonds to be issued under suitable restrictions for additions and improvements.

There will be issued approximately \$13,000,000 7 per cent prior preference stock, preferred as to dividends and assets and cumulative after July 1, 1926; also approximately \$36,500,000 7 per cent preferred stock, cumulative after July 1, 1927; and preferred as to dividends and assets next after the prior preference stock and \$43,000,000 common stock.

Each Boston & Maine bond issue (except bonds owned by the United States) to receive new bonds bearing present interest rate to and including July 1 of the year of present maturity, and 4 per cent to a new maturity date twenty years thereafter. (Example—4½ per cent issue due May 1, 1928, to receive new bonds with coupons at the rate of 4½ per cent to and including July 1, 1928, and 4 per cent thereafter until due date, May 1, 1948.)

General mortgage 6s owned by the United States (approximately \$48,000,000) to receive general mortgage bonds bearing a reduced rate of interest, maturing \$5,000,000 each Jan. 1, 1940, to 1949, inclusive. These bonds to be callable.

It is to the interest of all owners of first preferred stocks to consolidate the various classes. Therefore, classes A-B-C-D-E first preferred stocks will receive, upon subscribing at par to \$12 a new prior preference stock for each share of present stock, new 7 per cent preferred stock as follows:

Class A—present dividend rate 5 per cent—5 shares of new 7 per cent for each 7 shares now owned.

Class B—present dividend rate 8 per cent—8 shares of new 7 per cent for each 7 shares now owned.

Class C—present dividend rate 7 per cent—7 shares of new 7 per cent for each 7 shares now owned.

Class D—present dividend rate 10 per cent—10 shares of new 7 per cent for each 7 shares now owned.

Class E—present dividend rate 4½ per cent—4½ shares of new 7 per cent for each 7 shares now owned.

Present first preferred shareholders who do not subscribe to the new prior preference stock will receive new 7 per cent preferred

stock ascertained by deducting 15 per cent from the holdings of present first preferred stock classes A and E and 10 per cent from the holdings of present first preferred stock classes B, C and D before applying the conversion table above set forth.

Present 6 per cent non-cumulative preferred stock will receive 115 per cent in new common stock upon subscribing at par to \$15 of new prior preference stock for each share present stock. Non-subscribing preferred stock will receive 85 per cent of present holdings in new common stock.

Common stock will receive an equal amount of new common stock upon subscribing to \$20 of new prior preference stock for each share owned. Non-subscribing common stock will receive 60 per cent of present holdings in new common stock.

This plan attempts to deal fairly with each class of securities. Bondholders are asked to accept later maturities and to permit the issue of closely restricted prior lien bonds. In consideration for such extension by the general bondholders, the United States Government is asked to accept for the \$48,000,000 general mortgage bonds which it owns, similar extended bonds bearing a reduced rate of interest. The stockholder is asked to do his share by subscribing to the new issue of first preferred stock.

The plan would provide \$13,000,000 cash to be expended on profitable improvements; and prior lien bonds for future needs. The company would have no bond maturity before 1940. Fixed charges would be reduced. The company would be in a strong financial condition and able to distribute in dividends a reasonable proportion of its net earnings.

The Boston & Maine has already made substantial progress in its program of reducing the mileage of the system. Last October it announced its intention of divesting itself of its interest in the St. Johnsbury & Lake Champlain, a property which it controlled by ownership of a majority of the capital stock. The St. Johnsbury & Lake Champlain operates a line from St. Johnsbury, Vt., to Swanton, 96 miles, and in addition owns a 22-mile line from St. Johnsbury to Lunenburg, which it leases to the Maine Central. Boston & Maine directors resigned on December 20, and a new board of local Vermont citizens was elected. The new board expects to assume management of the property on January 1, 1925. The road has been operated at a deficit for several years.

#### Applications for Abandonment

The abandonment program has already been formulated in several applications to the Interstate Commerce Commission.

Last August application was made to abandon operation of the Suncook Valley Railroad, a leased line extending from Allenstown, N. H., to Pittsfield, 17.55 miles, and the Suncook Valley Extension Branch, Pittsfield to Center Barnstead, 4.57 miles.

Later in the same month permission was asked to abandon the line of the Nashua & Acton, Nashua, N. H., to North Acton, Mass., 20.11 miles.

In October, another application followed for authority to abandon 5.2 miles of the Lowell and Lawrence branch, 3.2 miles of the Salem and Lowell branch, and a connecting track of .42 miles between Salem Junction and Lawrence Junction.

Quite recently authority was asked to abandon the operation of branch lines from Goffstown, N. H., to New Boston, 5.16 miles; from Goffstown, N. H., to East Milford Jct., 18.54 miles, and from Manchester, N. H., to Henniker Jct., 22.77 miles. Petition has also been made to abandon the Peterborough Railroad, a leased line, from Wilton, N. H., to Greenfield, N. H., 10.64 miles; the Belmont, N. H., branch, 4.20 miles, and the Bethlehem, N. H., branch, 3.42 miles.

Recent proposal to abandon also a line from Wakefield Jct., Mass., to Newburyport, 31.17 miles, is announced as the cause of a request from the Interstate Commerce Commission that hearings called at its suggestion be cancelled by the Massachusetts State Department of Public Utilities on the abandonments in the vicinity of Lowell. It is understood that the federal commission desires to await further developments, and then send one of its own representatives to sit with the Massachusetts body.





*An Aeroplane View of the Locomotive Repair Unit*

## Southern's New Shops Have Efficient Layout

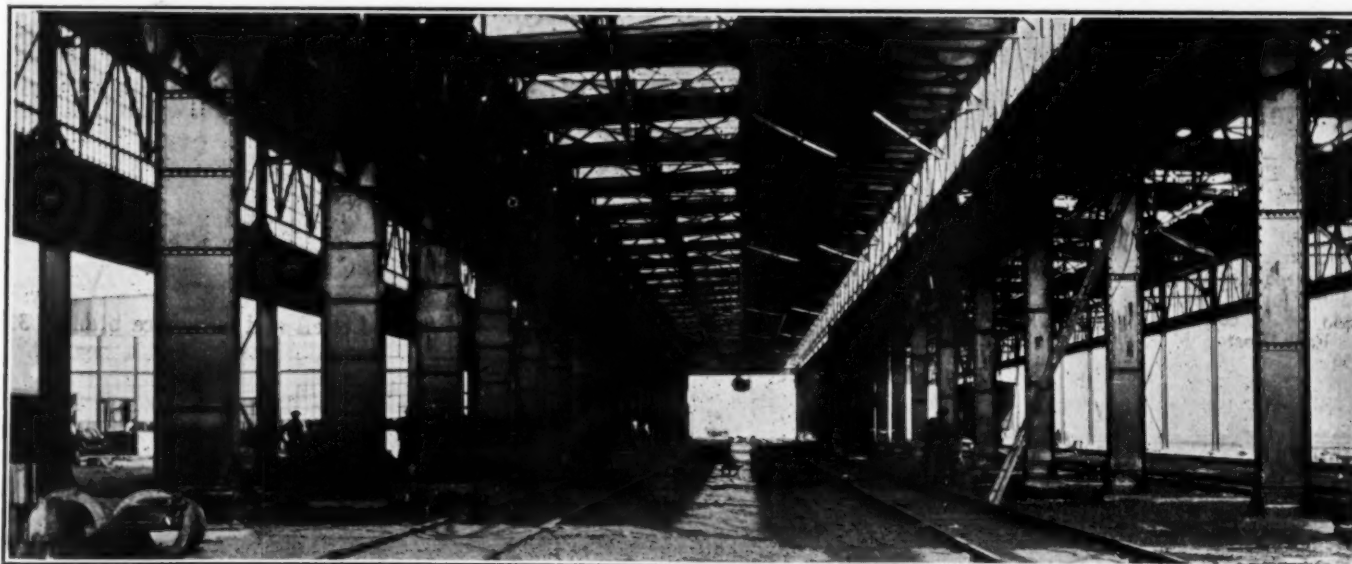
Modern Units of Interesting Design Erected at Birmingham, Ala., for Handling Locomotive and Car Repairs

**U**ILIZING entirely new equipment in conjunction with new buildings and a new track layout, the Southern has recently put into operation a modern plant for the making of locomotive and car repairs of all classes. The facilities are located in North Birmingham, Ala., and adjoin the Finley freight classification yard at that point. The locomotive repair unit consists essentially of a T-shaped

working mill, and similar units. With the exception of a few installations of a minor nature, all machine tools have individual, electric motor drives.

### Locomotive Unit Laid Out for Efficient Operation

The locomotive repair facilities are laid out in the form of a "T," the erecting and machine shops forming the vertical



**The Car Repair Shop Is of the Open Type**

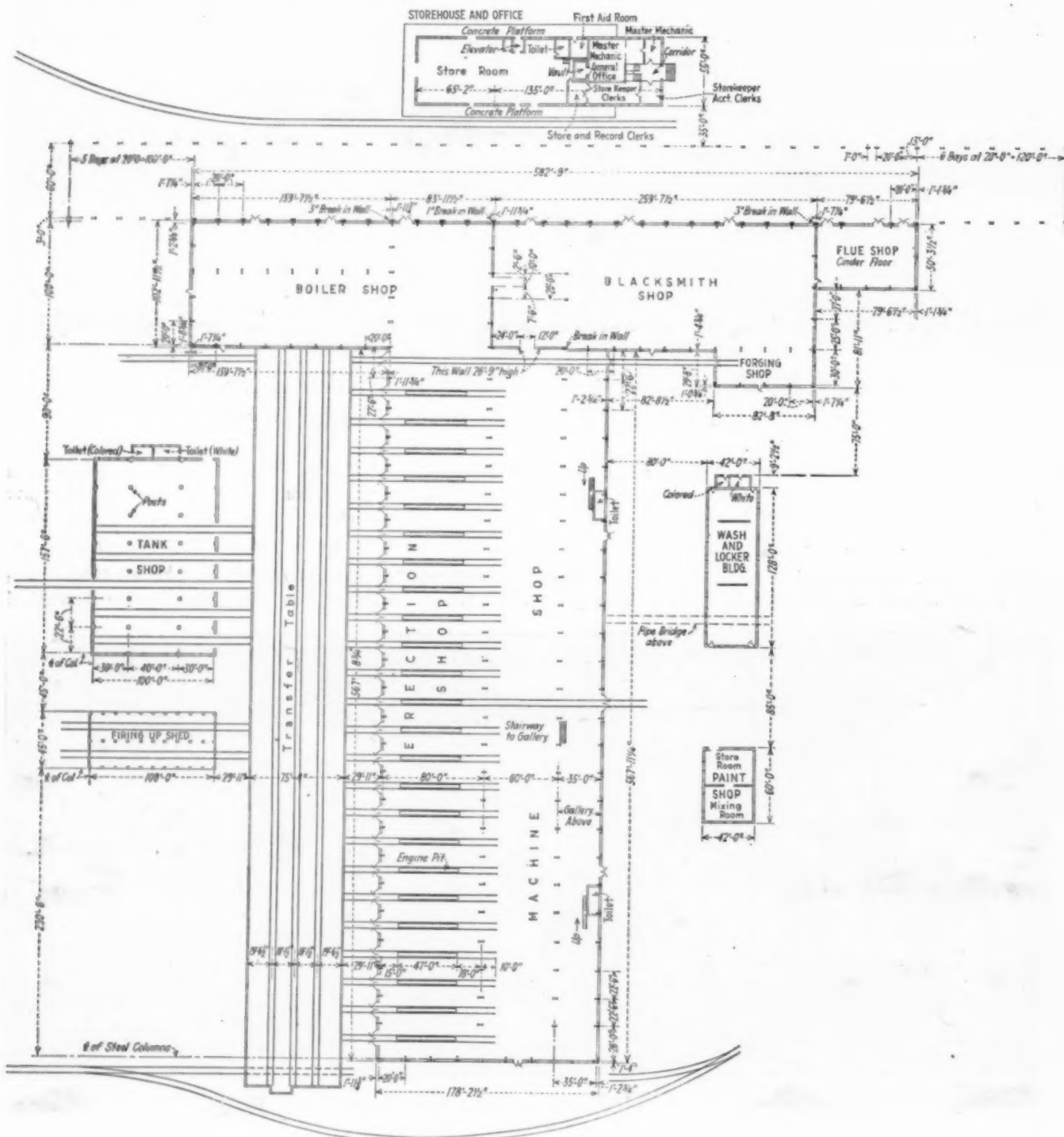
structure in which are housed in separate locations, a 24-pit erecting shop and machine, boiler, smith, flue and forging shops. Each is laid out for its efficient operation as an individual unit and in its relationship to the others. A transfer table is used for the transfer of power while a full complement of heavy and light overhead cranes has been installed for the handling of boilers and parts, etc. The car repair shop is of the open shed type having three bays and serving five tracks. It is likewise crane-equipped and is surrounded by modern shops including a wheel shop, a wood-

section and the boiler and blacksmith shops the horizontal or top bar of the "T." The flue and forging shops are in the form of wings attached to the blacksmith shop. While this unit is actually a part of one structure, each shop is given a definite section and is separated in some instances by partitioning walls and in others by only a line of columns. The general construction consists of concrete foundations, brick walls, with steel columns and roof trusses carrying a built-up roofing, except in the blacksmith shop where cement tile was used. The height of the sidewalls and the height

and type of the roofs are varied in each of the shops according to the needs at each particular point.

The section containing the erecting and machine shops is 178 ft. wide by 568 ft. long. The erecting shop is of the transverse type with a width of 80 ft. and a clear height of 47 ft. to the roof trusses. It contains 24 engine pits each

electrically operated transfer table on the other. The lead tracks from the building to the table pit are approximately 30 ft. long. The pit tracks are 22 ft. 6 in. center to center. All outlets for the supply of steam, air, electric power and light have been installed on the columns separating the erecting bay from the machine shop and portable welding



Floor Plan of the Locomotive Repair Unit

47 ft. long and one through track located along the walls of the boiler and blacksmith shops. This unit is served by one 150-ton overhead crane with a span of 77 ft. and two 15-ton messenger cranes with a span of 75 ft. The runways for these cranes extend the full length of the shops and into and across the boiler shop. Each pit track extends 10 ft. into the machine shop area on one side and to a 75 ft. 4 in.

equipment is used. Electric illumination for this shop and the others as well is secured by the installation of overhead reflectors with 500-watt lamps spaced approximately 25 ft. apart in each direction. The intensity is approximately five foot candles.

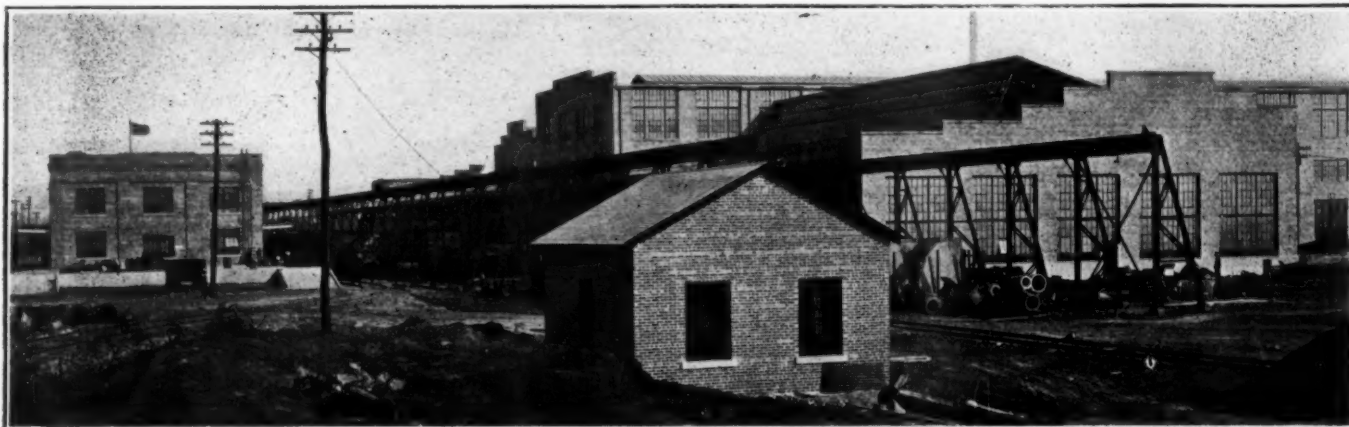
The machine shop section consists of two bays respectively 60 ft. and 35 ft. wide in the larger of which are installed



two 15-ton overhead cranes of 56 ft. span. These are operated the full length of the unit and into the blacksmith shop through an opening left in the partitioning wall between the two. The 35-ft. bay is arranged with a gallery floor running full length. This floor has small landing extensions built out into the crane bay in order that the cranes may be used in handling materials and parts to this floor. The heavy

through into the boiler shop where the construction is similar to that in the erecting shop. This shop is divided longitudinally into two bays of 40 ft. and 60 ft. each, the latter bay being equipped with a 20 ton overhead crane. The flooring is of wood block.

The blacksmith shop forms the other half of the "T" and is of the same general type of building except that cement



The Locomotive Shops, Storehouse, Casting Yard and Crane Runway

tool equipment is located on the main floor, the gallery being used for light repairs and including such facilities as manufacturing tool room, jacket shop, brass department, equipment for stoker engine, air pump and other repairs. The flooring in both the erecting shop and the machine shop proper is of wood block laid on concrete. The flooring of

tile is used for the roof covering and cinders for the floor. It is 100 ft. wide by 260 ft. long with a truss supported roof giving a clear span for the full width of the building except along the line of machine shop crane runway. Two additions at one end of this shop house a 50 ft. by 80 ft. flue shop and a 30 ft. by 80 ft. section utilized for the forging



Looking Down the Center Line of the Erecting and Machine Shop Bays

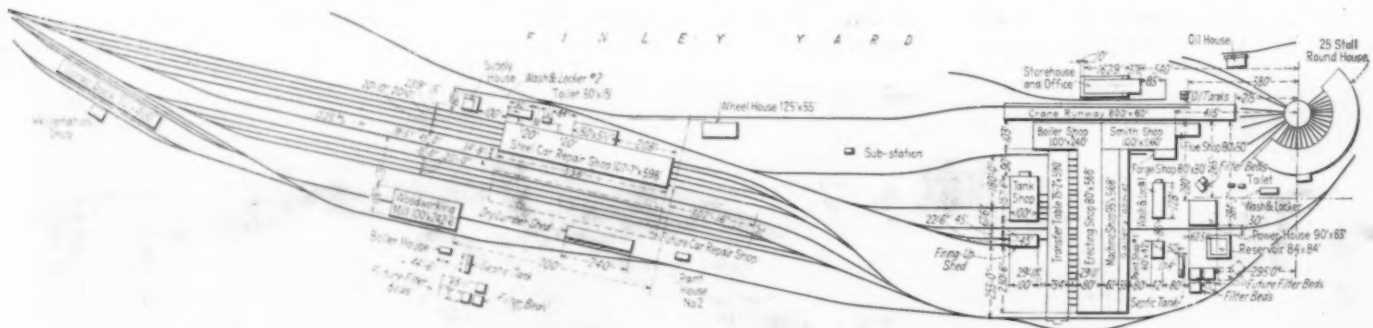
the gallery is of hard maple laid on a sub-floor of splined hard pine timbers.

The boiler shop forms approximately one-half of the section corresponding to the cross-bar of the "T." The boiler fabricating section of this shop is 100 ft. wide by 240 ft. long, the erecting floor being 80 ft. by 100 ft. The roof columns are uniformly spaced 20 ft. apart except at the section where the crane runway of the erecting shop is extended

machines. The latter section is served by a track passing along the outside of the blacksmith shop, through the machine and erecting bays and across the transfer table. All sections of these locomotive units are well lighted, a large expanse of steel sash being used in all the side walls and in skylights, monitors and clearstories. Wash and locker facilities have been provided for in a 42 ft. by 128 ft. brick building adjoining the unit. Toilet facilities have been pro-

vided for within the shops, the main installation being on two intermediate or mezzanine floors located in the machine shop and between the main and gallery floors. With the exception of a few units, all of the machine tool and other

The car repair unit consists of an open type steel car repair shop, a large wood working mill, a wheel shop, a dry lumber shed, a paint house and other attendant facilities such as wash and locker rooms, supply house, etc. The car

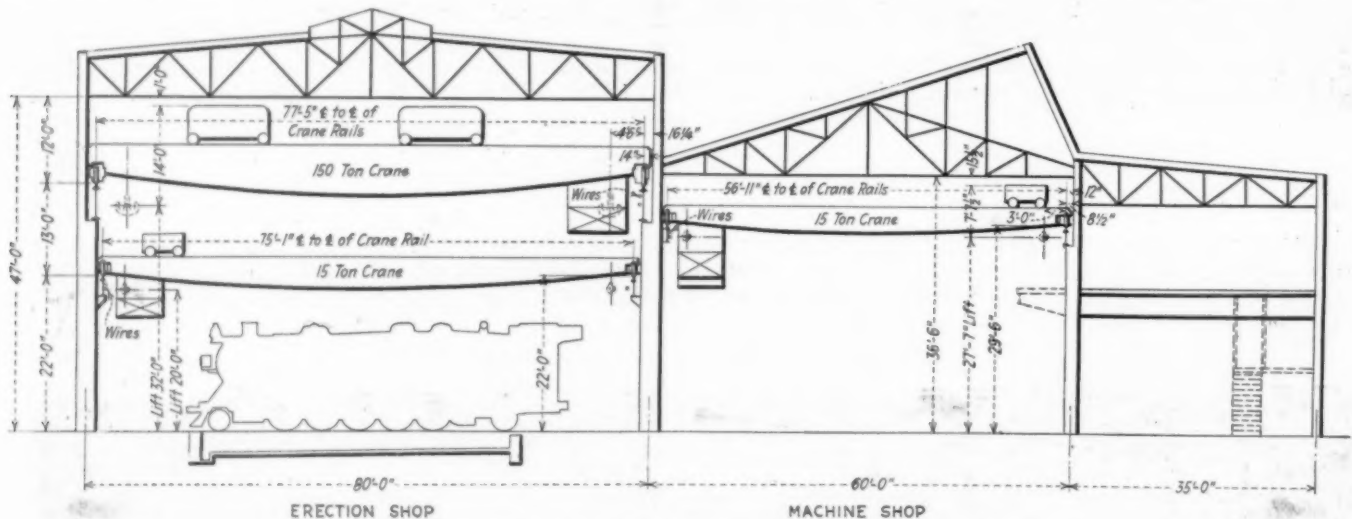


General Plan of the Two Repair Units and Serving Tracks

equipment in this and the other shops is entirely new and of the latest type.

The location of the locomotive units is such that sufficient space has been left to permit its duplication on the opposite

repair shop is of steel frame construction on concrete foundations and is 107 ft. wide by 598 ft. long. It is divided into three longitudinal bays, 38 ft., 40 ft. 10 in., and 26 ft. in width, with two tracks in each of the first two bays and one



A Typical Cross-Section of the Erecting and Machine Shop Bays

side of the transfer table. For this reason the construction of the tank shop and the firing-up shed which are now on the opposite side of the transfer table is of a temporary nature. Both are of timber, the former having five tracks, of which

in the latter. Crane service is supplied in the two latter bays, the center having two 20-ton cranes and the single track one having two 15-ton units. A machine shop to serve the car repair shop is located in a built-out, center section of the car shop and is an enclosed unit measuring 51 ft. wide by



A Modern Storehouse and Office Building Has Been Provided

one is a through track and the latter having two tracks. They are respectively 100 ft. by 157 ft. 7 in. and 100 ft. by 45 ft. in dimensions.



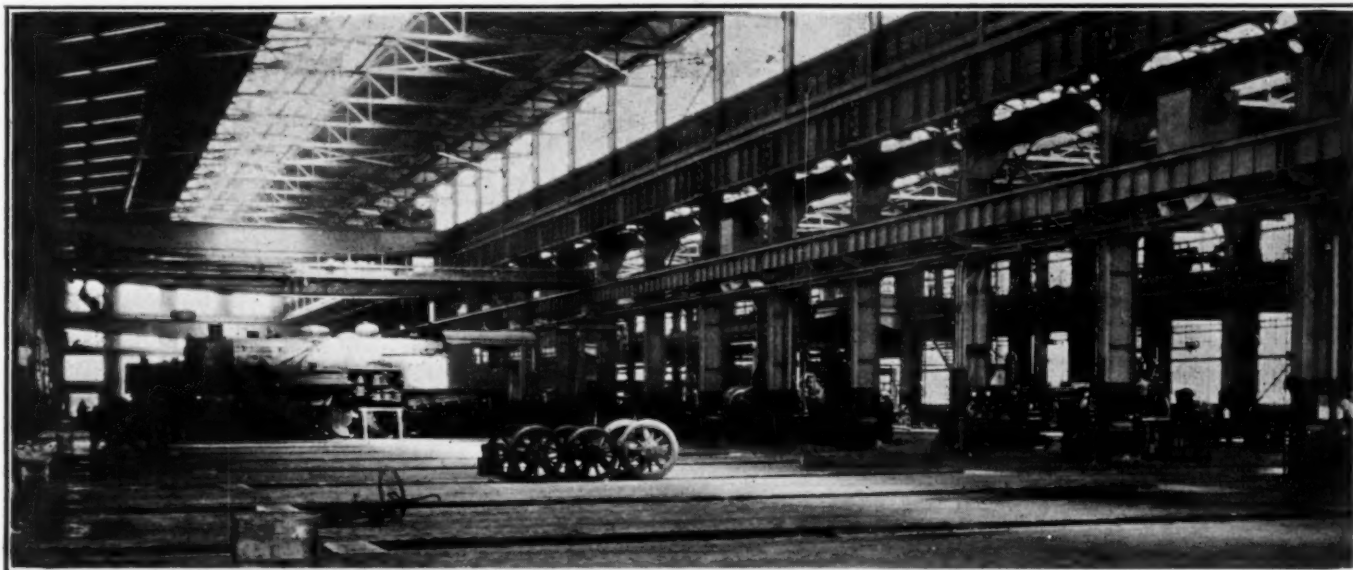
The Woodworking Mill Is of Ample Size

158 ft. long. This car repair unit like the locomotive repair unit has been situated so that it can be duplicated on an adjoining area and can be served by the same surrounding facilities.



The wood working mill is a large, modern, steel frame, brick and concrete structure measuring 100 ft. by 242 ft. The floor is of wood block and is free from columns, steel trusses of 100 ft. span being used for the roof structure. The side and end walls are almost entirely of steel sash which in addition to a large monitor has insured ample natural light. A track has been laid along the longitudinal center line, with

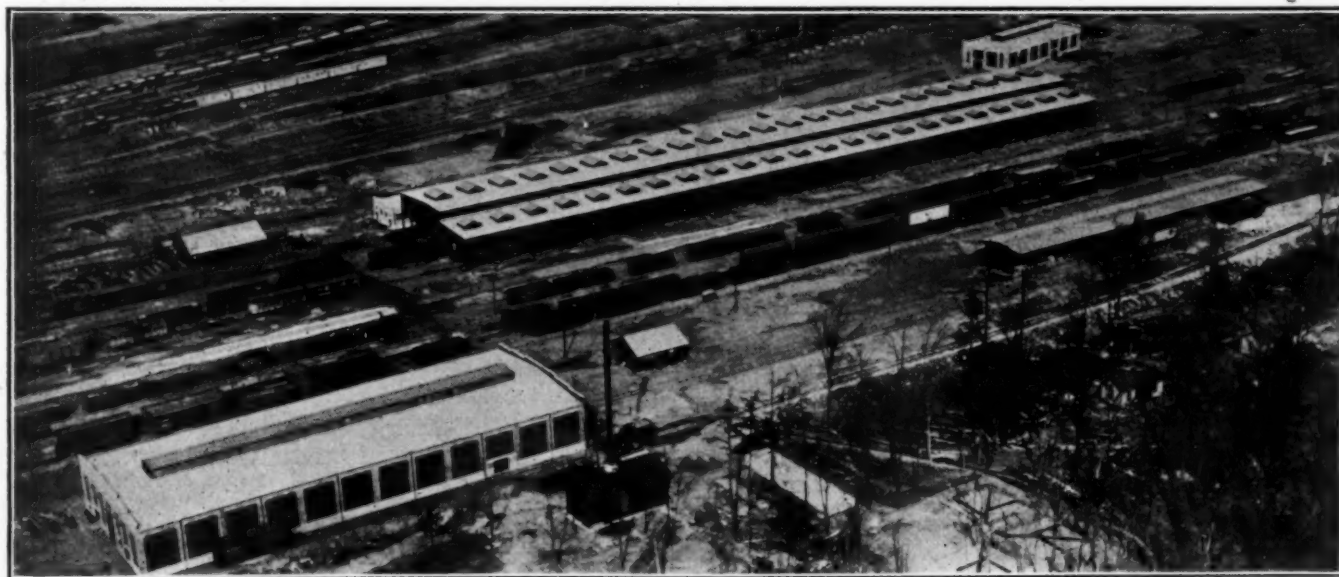
other to storerooms. It is of concrete and brick construction with concrete platforms extending across one end and for about three-fourths the length on each side. It is 210 ft. long and 55 ft. wide, the office section occupying approximately one-third of the total length on the first floor and approximately one-fourth on the second. Concrete was used for the floors of the storeroom on the first floor, while a com-



The Erecting Bay Is Connected with the Other Shop Sections

connections at each end to the car repair yard tracks. The dry lumber shed adjoins the woodworking mill and is of timber construction measuring 41 ft. by 241 ft. and thus providing ample storage space. A modern and well-laid out wheel shop adjoins the car repair shop and is equipped with the necessary machinery for the machining and assembling

bination of 1½ in. tongue and grooved flooring laid on 4-in. by 10-in. timbers set on edge to form a continuous laminated beam was used in the second story. The space between this building and the shop unit is utilized for a casting yard and is served by a 20-ton crane, one runway of which is carried on the walls of the shop buildings. This crane-



An Aeroplane View of the Car Repair Unit

of wheels and axles. It is of brick and concrete construction and is 55 ft. wide by 125 ft. long.

#### Storehouse and Casting Yard

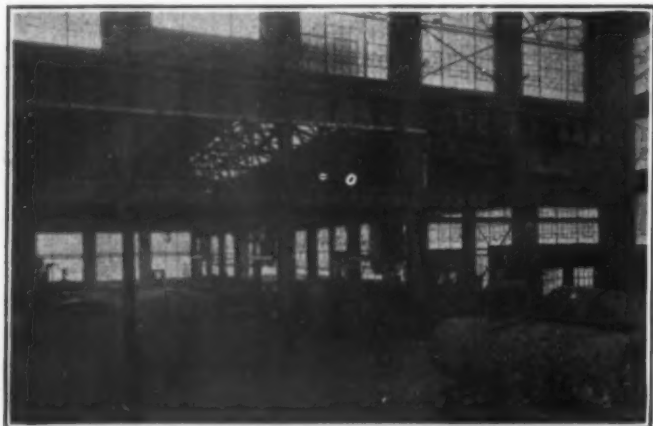
A large storehouse and office has been erected near the locomotive unit. This building is a two-story structure of pleasing appearance, one end being devoted to offices and the

way is now 800 ft. long but will be extended in the future to serve the wheel shop at the car repair unit.

#### Power House

The power house equipment consists of three 420 h.p. boilers with stokers and forced draft. The building is of brick and concrete, with overhead coal bunkers feeding direct to the

stokers. Two sets of hoisting equipment have been installed, one for elevating the coal to the bunkers and one for carrying up the ashes from the basement to an overhead bin, which in turn provides some storage and gravity loading of cars. The air compressor units consist of 2,500 cu. ft. steam driven and a 1,500 cu. ft. motor driven unit at the power house and 1,000 cu. ft. motor driven unit at the wheel shop. Exhaust steam is utilized for heating, unit heaters being placed along the walls and along the interior lines of



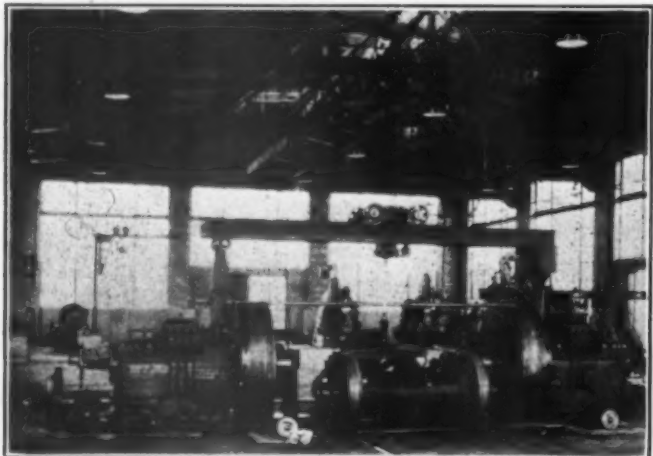
Interior of the Boiler Shop Section

columns of the various shop buildings. As a standby for use in case of emergencies, one turbo-generator of 300 kw. capacity has been installed in the power house.

#### Electrically-Driven Equipment

##### Used Practically Throughout

Practically all the equipment used in these shops is electrically operated, alternating current being supplied for the machine tools, for the yard and car shop cranes and for the transfer table. Direct current is used for the cranes in the locomotive unit. The power which is purchased locally is



Interior of the Wheel Shop

alternating current and is stepped down and used as such where needed and also to drive two 150-kw., motor-generator sets for the supply of direct current.

Fire protection for the buildings, etc., has been secured by numerous hydrants and hose connections installed at various points all fed from a loop line of 8-in. pipe extending around the entire layout. Water is secured from the city supply at 95-lb. pressure with a provision for a reserve supply by the use of a 200,000-gal. open reservoir located near the power house. As there are no city sewers in the section where the

shops are located, it was necessary to install sanitary sewers, septic tanks and filter beds which in turn empty into a small creek which serves as the main drainage for the entire area.

The construction of the shops was carried forward at a rapid rate and involved about 114,000 cu. yd. of excavation of which about 10,000 cu. yd. consisted of solid rock. This rock lay near or above the surface of the ground and necessitated considerable extra and sometimes difficult work. The actual construction on the foundations of the locomotive unit was started on February 21, 1924, some preliminary work on the total project having already been started in the early part of the month. The foundations for machine tools were built during the construction of the buildings and were completed well in advance of the buildings themselves so that the installation of the tools followed along with the finishing up work of the buildings. The overhead traveling cranes were erected prior to the receipt of the machine tools and were utilized for the unloading and placing of the equipment on their foundations. The first locomotive was placed in the shop on September 22. The shops were officially placed in operation on October 1, at which time there were 12 locomotives in the shop.

The new shops were laid out under the general direction of H. W. Miller, vice-president, the engineering details being handled by B. Herman, chief engineer, and the machine tool and mechanical department details by R. L. Ettenger, mechanical assistant to vice-president. The development of the plans and the construction itself was carried forward by Dwight P. Robinson & Company, Incorporated, New York.

## Freight Car Loading

WASHINGTON, D. C.

**F**REIGHT CAR LOADING continues to run considerably ahead of last year's figures. For the week ended December 13 the total was 956,761 cars, an increase of 57,004 cars as compared with the corresponding week of last year and an increase of 77,709 cars as compared with 1922. As compared with the week before there was a decrease of 11,495 cars. Increases as compared with the corresponding week of last year were shown in all districts except the Northwestern and in all classes of commodities, the increase in miscellaneous loading being 23,374 cars. Coal loading also showed an increase of 15,726 cars and l.c.l., merchandise an increase of 8,394 cars. The summary as compiled by the Car Service Division of the American Railway Association follows:

#### REVENUE FREIGHT CAR LOADING Week Ended December 13, 1924

Districts	1924	1923	1922
Eastern .....	220,773	220,764	222,856
Allegheny .....	188,900	186,325	192,076
Pocahontas .....	50,350	36,745	30,159
Southern .....	150,607	135,545	132,164
Northwestern .....	115,672	118,013	104,313
Central Western .....	153,247	141,708	141,212
Southwestern .....	77,212	60,567	56,272
Total Western .....	346,131	320,378	303,797
Commodities			
Grain and grain products .....	52,651	50,670	50,985
Live stock .....	43,210	40,800	38,503
Coal .....	191,854	176,128	195,251
Coke .....	11,313	11,312	13,175
Forest products .....	71,855	67,381	59,828
Ore .....	11,734	11,090	11,011
Mdse., l. c. l. ....	248,297	239,903	224,312
Miscellaneous .....	325,847	302,473	285,987
Total .....	956,761	899,757	879,052
December 6 .....	968,256	913,921	909,174
November 29 .....	878,631	835,031	840,412
November 22 .....	1,010,122	990,299	946,642
November 15 .....	1,015,704	992,050	957,564
Cumulative total, January 1 to date.	46,980,571	48,319,067	41,677,025

The freight car surplus for the week December 8 to 14 averaged 223,431 cars, of which 86,705 were box cars and 100,793 were coal cars. The Canadian roads had a surplus of 17,150 cars, including 13,450 box cars and 200 coal cars.



# Co-operation in the Transportation Industry\*

## What Is Needed Is the Application of Sound Common Sense Based Upon Cold Facts

By William N. Doak

Vice-President, Brotherhood of Railroad Trainmen

**T**HE GENERAL TRANSPORTATION SYSTEM of our country presents varied problems—none are of such importance, however, as is the question of co-operation among the interests making up this great industry. Through co-operation and exchange of views we reach understandings which mold public opinion; therefore, the future of our railways is what we make it. We, the people, constituting as we do the public, have it in our power to either build up the rail carriers or to wreck them, all depending upon our treatment of them.

### Facts Needed

The most important problem at present is to assemble facts upon which to base conclusions. If we direct our efforts in the right direction we have every assurance of success in the end. We may proceed always on the theory that our people are fair and will deal justly with any problem when they know the truth. In the outset, in the interest of the public good, capital, labor and management should be assured of adequate protection. Transportation needs are not academic questions, they are every-day practical problems.

In times of peace our rail carriers are decidedly the greatest contributors to our advancement and progress. In case of war or invasion these carriers are our chief lines of defense. The development and general good of our country is so interwoven with our various modes of transportation that we can not separate them even remotely. All must recognize the important part transportation plays. Our distances and broad expanse of territory make the very life of our nation dependent upon prompt, efficient and adequate transportation.

Those who give serious thought to our national welfare at once arrive at the conclusion that there is need for understanding of transportation problems. It is inconceivable that any one would advocate a plan which would wreck our rail lines by experimenting with untried methods and then claim to be honestly sympathetic with them or our government.

### Railroads Cannot Be Supplanted

Railroad transportation will be supplemented by other methods of transportation as occasion demands but any attempt to supplant it by other or even by a combination of all other known methods at this time, or for many years to come, is entirely out of the question. Then immediate attention should be directed to the best means of aiding and perfecting these agencies of commerce.

The need for the immediate future is a broader understanding of the general subject. A campaign to disseminate hard, cold facts about the various railroad problems is badly needed. In this campaign of education a square deal must be accorded to all. The plain unvarnished truth must be told about finances, management, employees and service. With propriety we may even suggest the teaching of transportation in our schools, colleges and universities and that, at the very least, students be instructed in transportation

fundamentals. It also does not appear amiss to suggest that advanced courses from time to time be added. In teaching transportation the investors' interest should be fairly presented, problems of management made plain, and the rights, interests and needs of the employees set forth in the most favorable terms.

Our half century of one-sided presentation of facts by the respective parties has brought us no lasting benefits because the presentation has been made usually under the claim that one interest was paramount to all others. No good can ever come from such a short sighted, selfish policy in dealing with any transportation problems. Great good will come from fair recognition of our various transportation needs and through co-operation.

We have had too much agitation in an attempt to influence public opinion erroneously when we should have had unity of effort to give the public exact facts. Co-operation is the order of the day. Neither sympathy nor quarter should be given those who disseminate false information. Agitation by half-truth methods against either the railroads or the employees should be condemned.

### Applied Common Sense

The three factors upon which the future success of the American railroads depends are: management, including investors and officials; employees, and the public. Each must co-operate with the others for the general good of all. By arousing sympathetic public sentiment a broader understanding of the needs of both roads and employees will result. A comprehensive study of present financial conditions and future needs of the carriers will prove valuable and should be made.

The railroads must have more consideration from the public than that which comes from a reduction in rates. Progress need not be expected while the carriers' finances are bad. Neither shall we get very far by a system of theory as to the employees' rights. The best guarantee for advancement is applied common sense.

If there should be the slightest grounds for charges of financial manipulation or mismanagement, these should be immediately removed, thereby clearing the way for a new start in the right direction.

### Settling Labor Disputes

Public or federal boards, commissions or courts for the adjustment of labor disputes have usually been found unsatisfactory. More good has come from understandings reached in conference than by other means. Great good would come from the establishment of an agency of the government whose duties it would be to study labor in its various phases, anticipate any approaching discontent and offer suggestions to the parties for the adjustment of their differences. Labor relations, finance, management or other railroad problems are susceptible to the same rule of reason as are any other human endeavors.

Railway organizations of officials and employees should be encouraged. There is need for a further joint organization, one of investors, management and employees. Its object should be encouragement of mutual respect and good

\* From an address before the seventieth meeting of the Economic Club of New York, held at the Hotel Astor, December 8, 1924.

will. Such an organization would be able to command complete public confidence concerning transportation problems.

The importance of an institution such as the transportation system of our country should be more generally reflected by the public mind. Transportation problems are seldom understood by the average individual. They are more often misrepresented than any other important public questions. Of those informed, a large percentage know only one or two phases of the situation, and these are either indifferent as to the other factors or thoughtlessly disregard their welfare. Unfortunately selfish interests too often preclude broad liberal treatment of any general subject. Those who are interested only in rate reductions many times lose sight of the requirements of the service or the needs of the employees. Great pressure is often brought to bear upon both management and men in an effort to have them disregard the needs of investors. Exact facts should be stated from all angles. If rates are too low they should be increased. If salaries are inadequate they should be raised. If wages and conditions of employment are improper these should be readjusted properly. Unity of effort among investors, management and employees should prevail, and jointly they should ask of the public fair treatment for transportation.

Something should be done to assure public support and which would at the same time guard against the half hearted, unfair methods of the past in dealing with this industry. Our people are fair and will see that the railroads receive justice. In the adjustment of railroad rates, wages and conditions of employment our efforts should be free from bias and devoid of the alarming features which usually follow in the wake of such proposed movements.

#### Present All the Facts

Representatives of respective interests have too often contended for their own particular demands and have not always presented all the facts. This course has brought opposition from other interests, not because the demands were unjust but because consideration for the others was not given at the same time. In these campaigns many harsh things have been said sometimes to such an extent that the public gained an unfavorable impression of all concerned. There is no need for friction and warfare. Frank conferences and unity of purpose will solve our problems. Strikes and other forms of industrial war will cease in proportion as employers and employees approach an era of mutual respect and good will and when supported by the public in their efforts. An oppressive employer is just as bad as an unreasonable employee. Both are wrong and none can afford to apologize for the acts of either.

Capital expenditures must be made each year in order to meet service requirements, the demands for improvement of service and new methods of operation. New safety devices and modern equipment must be had. These require the trained services of expert officers and skilled workmen. Railroads must keep well abreast of all industries in efficiency and initiative. Advances in wages of employees should be generously made commensurate with the high class of service performed.

Progress demands advancement and denounces pernicious activities. We must either go forward or retrograde. Advancement ceases if all activities are in the direction of criticism which fails to provide remedies for the situation. In dealing with transportation problems either from an operating, legislative or regulatory standpoint one should never act on assumption nor be governed by malice. Neither prejudice, animosity nor the desire to further selfish ambitions should influence action in dealing with questions of such magnitude.

Employees should advocate a policy of fairness for the railroad that employs them. Operating officials should

insist, as a matter of propriety, on good wages and proper working conditions for the men employed under them. Owners of railroad securities should demand of their patrons adequate returns to meet interest charges, wages and salaries. Each of these groups should stand firmly together for the interest of their industry.

Unfortunately, however, there are some who hold to the antiquated theory that an alliance between employer and employee is unholy and unjust. Just such theories have caused innumerable industrial ills. Railway officials and employees do not become contaminated by dealing jointly with each other. Neither do directors nor investors become less important by rubbing elbows occasionally with men and management. There is another dangerous malady that each would do well to avoid, and that is the infection of the professional demagogue. Nothing yet has been so fatal nor has so many wrecks to its credit as has the industrial quack who parades along life's highway in the guise and under the cloak of a public benefactor. Those who deliberately engender strife between employers and employees should receive public condemnation.

A plea of "good intentions" should not be accepted as an excuse for industrial blunders. Public men, like all others, must be discreet in their utterances especially on important questions. Excuses for misstatements of facts must not be accepted. Deliberate utterances of half-truths must receive merited rebuke.

Our industry and labor must be handled in an American way. To copy after any other system or plan so far devised in the world spells disaster. This is particularly apropos of the railroads and their employees. Our own transportation methods are so far ahead of all others that no comparisons can safely be made. Labor relations on the railroads in the United States excel those of any country and we should hesitate to substitute any other for ours regardless of name or style. We could so much more profitably employ our efforts in correctly adjusting our own affairs, industrially, socially and economically, to more fully conform to American ideals. Investigation has developed the fact that foreign or so-called industrial democracy does not fit in with our form of government, therefore, industrial misfits are no more comfortable than social or commercial ones.

By earnest effort and sincerity of purpose industrial peace is obtained. In some of the branches of transportation the carriers and their employees have gone a long way in demonstrating what can be accomplished in labor relations through mutual respect and confidence. This should not only be continued but should be broadened to include all branches of the transportation system.

The economic waste, to say nothing of hardships and inconveniences, resulting from the policies which have lacked general co-operation should convince any one of its fallacy. We can have fairer returns on investments, better service, more favorable wages and conditions of employment when we each learn that we are friends and brothers in the business. Never should we think of placing any element at a disadvantage, to the contrary, give each a square deal by better understanding his case.

#### Fallacy of Government Ownership

In general, transportation in its relations to our government, to the public, and with its many factors, should be treated as a necessity and not as a plaything or a theory. Neither public ownership, restrictive government regulation nor undue interference mean success for the railroads nor for the government in dealing with them. The rights of railroad employees cannot best be served by government ownership, the most efficient transportation will not accrue thereunder nor may we expect the necessary development of transportation to meet our rapidly growing needs under any plan of public ownership or operation.



Undue interference by governmental bodies, either legislative or regulatory will not produce a healthy transportation system. A broad liberal policy of giving encouragement by sane helpful legislation, would insure the greatest measure of freedom in operation and development, and make for success. The public demands good service, employees are insistent upon having good wages and wholesome conditions of employment, management is concerned in producing successful operation and investors are solicitous of proper returns on investment. These constitute a group with mutuality of interest of such magnitude as to at once command proper legislation. Desirable legislation will not come through a selfish or exacting position on the part of either of these interests.

Consolidations are necessary in order to link up the transportation lines in groups of proper size and advantage. They will be accomplished by voluntary methods, assisted by proper permissive legislation. Compulsory consolidations seem unworkable from many angles; most particularly the financial problems present almost insurmountable obstacles. These consolidation problems must have the sympathetic public support, devoid of every tinge of selfishness.

Legislation giving proper protection to that great corps of employees engaged in the transportation business must be encouraged. Human life, and the protection of employees from injury must never be given secondary consideration. The public must support a liberal policy of law enactment and insist on the strictest law enforcement so far as employees' protection is concerned. Not only should law enforcement in this particular be stringent but safety first methods should be widely encouraged by all, through a campaign of education and instruction in safety principles.

May we not repeat that the entire railroad situation is so completely dependent upon co-operation among all interests that it cannot be handled without the fullest measure of confidence and good will. Therefore again I say the future success of the railroads, as effective agencies of transportation and their successful relations with government, will be just what we make it, by honest dealings with them and through co-operation among ourselves.

## Whiting Screw-Type Electric Drop Table

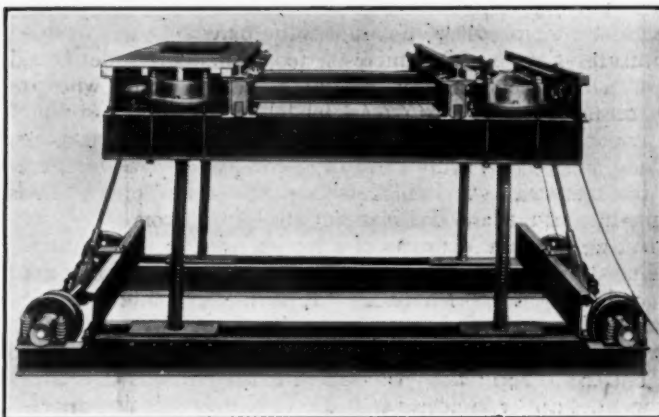
**T**HE WHITING CORPORATION, Chicago, has developed a new screw-type electric drop table which may be designed to perform any dropping operation on wheels or other parts of locomotives or cars. Particular advantages in the design of this drop table are safety, secured by the worm and gear type drive now used on over 100 Whiting hoists; ample, reliable power by means of electric motor drive; the absence of air or water lines, a feature of importance particularly in the northern states; and the provision in a single unit of a drop table for driving wheels and tender truck wheels.

The new drop table consists essentially of a truck with four stationary screws, the table being built on top. Wheels and axles are provided at each end of the truck, inserted in roller bearings to permit easy lateral movement. The boxes are spring supported so that when the full locomotive weight is received, the springs will deflect. This in turn seats the screws on the rails, passing the weight to the foundation.

The table rails are reinforced and supported by beams. The load is carried to the driving units by means of transverse channels. The driving units consist of worms and worm wheels with roller thrust bearings, the latter being 14-in. in diameter and containing 56 rollers. The driving motor is mounted on the table, thus making it safe from

flood. The control is a matter of choice but the push button type with extension cord gives the most flexibility.

The pit is rectangular in cross section and may be constructed straight or in conformity with the enginehouse circle. Channels are set in the wall to guide the table and insure its being correctly positioned. Sockets are provided for the power plug on the extension cable leading to the hoist. In operation the power is turned on and the table run up until the locomotive weight is relieved from the locking bars.



Whiting Self-Contained Electric Drop Table for Enginehouses

These bars are thrown out, a single lever performing the operation, and the table and load are then dropped to the low position. The table, including the entire elevating and lowering mechanism, is moved laterally by ratchets, the use of roller bearings making it possible to do this with one hand.

In dropping locomotive drivers, it is not necessary to take the locomotive weight on jacks before starting, as the new table has a capacity of 50 tons. Neither is it necessary to spot the locomotive closely as the entire rail section drops. As there are no heavy rail beams to be moved out of the way, only a mechanic and helper are needed to do the work. In replacing the drivers with an ordinary drop pit, they are first raised in place, the rail beams replaced and a scaffold erected. With the drop table, the operator can stand in the table pit with the push button switch in his hand and come up with the drivers. The shoes can be placed first and held by shims. The pedestal binders can be set on blocks and fitted with wedges. In this way all the operations can be performed at once, saving time.

If the table is of sufficient length, two pairs of drivers or tender truck wheels can be dropped in a single operation. On the other hand, a single pair of tender wheels can be removed simply by running them out on the table and blocking under the spring seat. Trailers may be handled; or a cradle casting can be blocked on the table and dropped without using extra blocks and tackle.

Boosters are readily removed on the drop table, a difficult operation on a drop-pit jack on account of the shifting weight caused by the overhanging weight of the booster engine and the spring weight, which drops to zero after a few inches table movement. The Whiting drop table has four legs and any shift of weight does not affect it. In addition, spring work is said to be done quickly and easily without disturbing any box packing. To renew a spring the table is raised two inches above the rail and the spring rigging blocked. The table is then dropped, relieving the weight off the spring. It can then be readily renewed. The same method can be employed in spring equalization.

Truck or trailer brasses also can be replaced readily. After blocking the box, the table can be dropped a few inches. On account of the self-locking worm drive, it is then safe to remove and replace a brass.

## Railway Regulation Should Be Decentralized\*

By H. G. Taylor

Member, Nebraska State Railway Commission, Lincoln, Neb.

**R**EGULATION, stripped of the punitive element, is an intelligent effort to retain the advantages of individualism, or private ownership and operation, and at the same time prevent the excesses and abuses in which, unfortunately, we humans are prone to indulge. Like all other activities of human life, it must justify itself. It cannot continue inefficient and cumbersome and expect to hold a place in the social order. Notwithstanding its governmental aspects, it is subject to the same economic obligations as the industries over which it exercises supervision. It is a product of modern civilization.

But we need a re-baptism of common sense in this country. We need to learn over again the lesson that government is not a good fairy or a rich uncle. It is merely ourselves. It can do all we can do but no more. There may be good government and bad government, but it is no better or worse than its citizens. Too much government usually means bad government, since it indicates that the citizen is shirking necessary duties and evading personal obligations. That is the reason for our bad government today. In my opinion, government in all departments needs two things—simplification and decentralization. Applied to the regulation of our transportation systems of this country, these two essentials stand out predominantly.

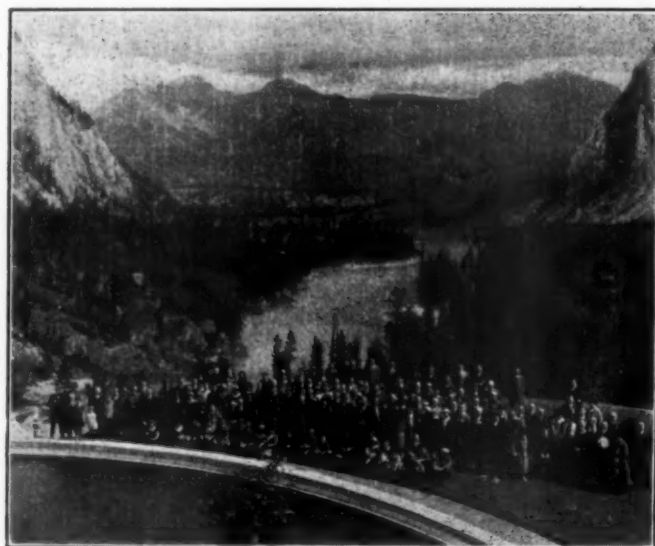
Due to a tendency inherent in all governmental agencies, the multiplying of activities prompts a standardization of methods and administration. This facilitates the disposition of the mass of work thrust upon the regulatory body. A code of rules and precedents is established and their application turned over to a corps of subordinates. It follows that such rules must be uniform and rigid. It follows, also, that subordinates, lacking the discretion of their superiors, administer these rules literally, and being responsible only to their chiefs, and out of direct touch with the persons affected, make a fetish of uniformity to the serious impairment of substantial justice. This occurs in spite of the best intentions on the part of the officials responsible. It is one of the vices inherent in all over-large organizations and particularly prevalent in government when it attempts too much.

The men now composing the Interstate Commerce Commission have distinguished themselves for their grasp of the transportation problem and have been indefatigable in their efforts to meet the burdens thus imposed upon them. Any criticism of results is directed at the system and not to individuals. In the three weeks ending February 2, this year, the Commission promulgated reports and orders in 130 formal docket cases and put out 26 reports proposed by its examiners. No court or administrative body endowed with quasi judicial functions, it is believed, ever approached such production of decisions. These figures do not take into account the vast volume of administrative matters imposed by the act to regulate commerce. Among the more important of these are the valuation of railroads, the supervision of securities issues, the recovery of excess railway earnings and loans made therefrom to railroads, supervision of the bureau of accounts and statistics, locomotive inspection and administration of the safety provisions, consolidation of railroads and telephone companies and a number of others. Upon direction of Congress the Commission has also conducted several extensive investigations. The resultant situation is tedious, expensive and unwieldy.

These are largely mechanical difficulties, however, and are by no means as important as the infirmity incident to the long distance administration of the law. That intimate touch with people and conditions, that personal knowledge of local affairs, that back-ground of tradition and understanding so essential to full-handed justice, are impossible, Railroad regulation, like everything else, needs the human touch. The enormous mass of detail now handled by the Interstate Commerce Commission should be shifted closer to the point of origin. It has been suggested that federal regional commissions should be created to handle such matters. Personally I prefer some such plan as that suggested by Judge George W. Anderson of the Massachusetts Federal Bench, and a former member of the Interstate Commerce Commission, which he presented in an address to the National Association of Railroad and Utilities Commissioners in 1920. As a substitute for a further extension of the federal organization he would clothe the state commissions with federal authority and provide for the necessary appeal to the federal commission. Either that or some similar plan is essential if regulation of railroad rates and service is to continue a success.

The development of this plan should relieve the Interstate Commerce Commission of a great mass of work and free it for a more intensive and searching study of transportation problems, reserving to it at the same time full power to maintain the national character of transportation. It would add only slightly to the work of the state commissions, since they are today employed with the regulation of state rates, and, through co-operation, have much to do with interstate matters. It would follow, of course, that their work as advocates before the Interstate Commerce Commission would have to cease. Each tribunal could thus function in its appropriate field and if the spirit of co-operation continued to permeate the relations of the two jurisdictions the net result should be greater efficiency in regulation, with a corresponding improvement in the morale of the railroads themselves, through the restoration of their opportunity for initiative and independent action.

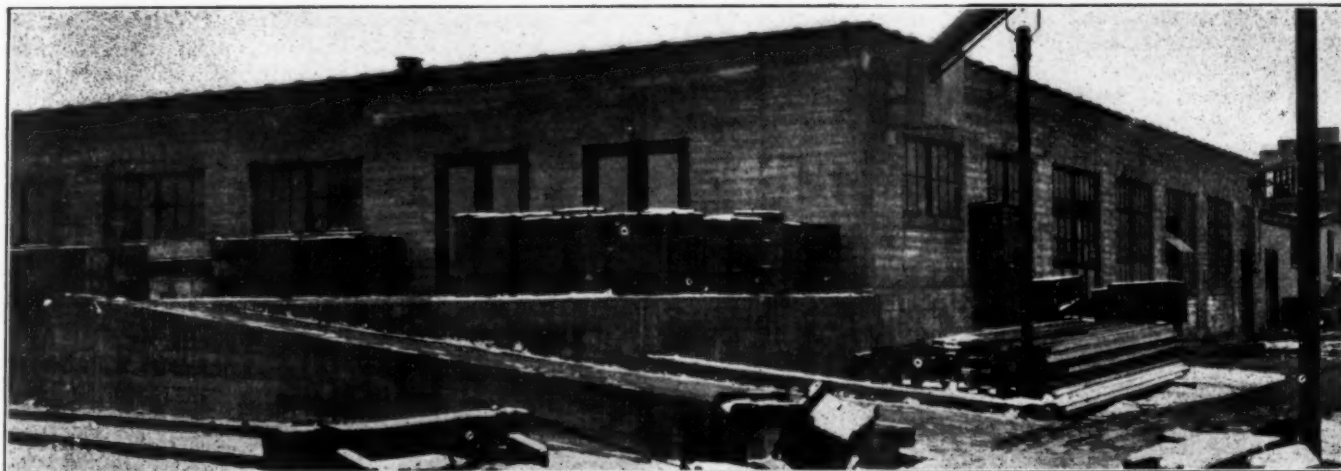
I have said there should be less of regulation rather than more. I believe that policy is fundamental to the future well being of the railroads of this country, and when I refer to the well being of the railroads I have in mind, of course, the well being of the nation as a whole, because the two are inseparable. Beyond the restraint necessary to check abuses the government should not venture.



Short Line Railway Officers at Banff Springs Hotel, Alberta

\* Abstracted from a paper presented before the Western Railway Club, Chicago, on December 15.



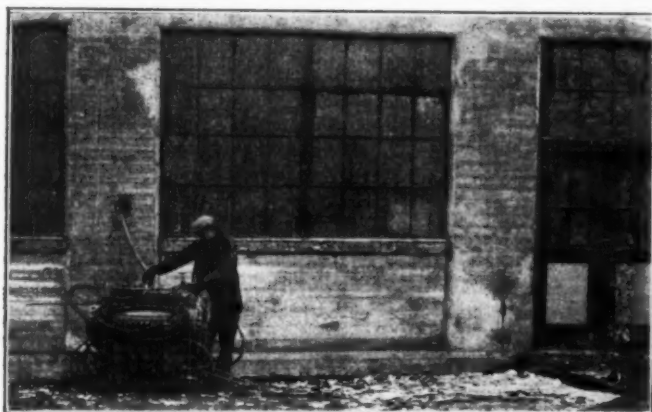


View of the New Storehouse at the Selkirk Yard Engine Terminal of the New York Central—The Oil Room is Located at Right of the Storehouse at the Left—The Platform Serves Both

## Modern Equipped Oil Room on the N. Y. C.

Convenient Facilities Provided for Economical Disbursement to Two Large Engine Houses

**T**HE NEW YORK CENTRAL HAS RECENTLY placed a new oil room in operation at its Selkirk yard engine terminal, near Albany, New York, which is considered to be one of the most modern installations of its kind. The pumps, tanks and oil handling equipment were manufac-



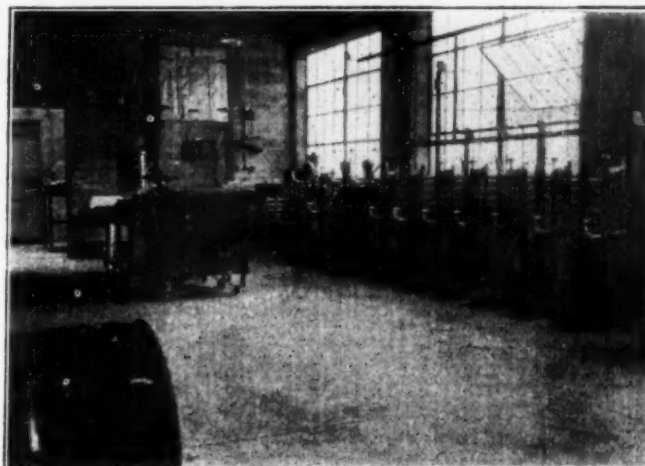
The Portable Tanks Used for Delivering Oil to the Two Engine Houses Are Filled Outside the Oil Room

tured and installed by the S. F. Bowser & Co., Inc., Fort Wayne, Ind. Both the oil and the store rooms are in the same building, which is of single story, fireproof construction. The oil room is 74 ft. long by 25 ft. 6 in. wide and is located at the same end of the building from which disbursements for the entire storehouse are made.

A large basement is provided underneath the oil room which accommodates 12 oil storage tanks. These tanks are of rectangular construction and are equipped with glass gages and storage indicators which are located directly back of the pumps in the oil room, an interior view of which is shown in one of the illustrations. Three tanks of 4,000 gal. each are used for storing car oil. These tanks are connected by equalizing pipes and are equipped with steam coils. One tank of 5,000 gal. capacity is provided for the storage of blowing oil. No. 2 valve oil is stored in two 4,000-gal. tanks which are also equipped with equalizing

pipes. A 3,000-gal. tank is used for No. 1 valve oil. These tanks are also equipped with steam coils for keeping the oil warm so that it will flow freely. Three tanks of 600 gal. capacity each are used for the storage of red machinery oil, gas engine oil and flange oil and two tanks of 300 gal. capacity each are provided for dynamo and cylinder oil. Provisions have been made for drawing the oil from all of these tanks by means of pumps located in the oil room.

There are also three underground cylindrical tanks located outside the store room for storing long-time burning oil, fuel-oil and gasoline. These tanks are of 12,000 gal.,



Interior View of the Oil Room—The Storeroom Attendant's Desk Can Be Seen Through the Doorway at the Extreme Left

20,000 gal. and 1,000 gal. capacity, respectively. Pumps are also installed in the oil room for drawing oil from these tanks.

### Interior Arrangement Facilitates the Handling of Materials

The design of the building and arrangement of equipment has been planned with the primary object of facilitating the

handling of material and expediting disbursements. The floor of the receiving end of the oil room is constructed at the same height as the car unloading platform. The floor of the oil room is four feet lower than the floor of the receiving end, which is divided into two rooms. One of these rooms is used for the storage of waste. This is enclosed by inside walls built eight inches thick to provide better protection in case of fire. The other room, designated as the oil filling room, is equipped with nine fill boxes which are connected to the various tanks in the basement. As shown in one of the illustrations, there is no dividing partition between the oil filling and oil pump rooms. Access is had from one to the other by a short flight of steps. The height of the filling room floor being the same as that of the unloading platform facilitates the emptying of barrels which have been unloaded from the cars and also facilitates the unloading of waste. In addition, the car oil and No. 2 valve oil tanks have fill pipes terminating in fill boxes at the storehouse siding, which are provided with connections for filling direct from tank cars.

The lower elevation of the oil room floor makes it an easy matter to load portable tanks which are backed against the higher floor of the filling room. A group of three portable tanks which are used as dope containers are shown in one of the illustrations standing in position for loading from the filling room.

Dope is received from the reclaiming plant at the West Albany shops in barrels which are unloaded at the Selkirk oilroom and emptied into the portable vats. These vats are equipped with a netting located at a sufficient height from the bottom so that the dope does not lie in the oil which has seeped through the mass of waste. The oil can be drawn off through a faucet at the bottom of the vat. Portable vats of similar construction are also used for piston swabbing.



View of the Filling Room from the Oil Room—The Three Portable Dope Vats in the Foreground Are in Place for Filling

Considerable attention has been given to providing equipment that will assist in keeping the oil room clean. Containers, constructed of light sheet metal, have been provided for covering barrels of soft soap and crater compound. They are built with drop lids on the top, but with no bottoms so that they can be set over the barrels and access to the contents of the barrel may be had by raising the lid. This type of container makes a much better appearance than a greasy barrel and it is considerably easier for the attendant to remove small quantities of material without smearing the sides of the barrel and floor.

Twelve pumps for drawing oil from the various tanks in the basement are located on the oil room floor in a convenient location for the delivery window attendant. These pumps are equipped with registers which show the total amount of oil deliveries.

They are also equipped with intermediate quantity stops so that a pint, quart or half gallon can be accurately measured and delivered. A pump is also installed outside the store-



The Oil Room Delivery Window Is Conveniently Arranged for Quick Service

house for drawing oil from the gasoline tank for filling trucks.

The delivery window of the oil room opens into the same room used for delivering supplies from the storeroom. The counter shelf is provided with an overflow or drip pan which catches any oil that may overflow or drip from torches, lantern reservoirs or other containers that are being filled by the attendant. A table and scales for disbursing solid lubricant and waste as well as portable dope and piston swabbing vats, are arranged in a convenient position for making disbursements.

When the dope vats are filled at the filling room they are set against steam coils placed along the wall of one side of the room. Steam coils are also placed underneath the edge of the filling room platform in order to keep the vats warm while they are being filled. As soon as the attendant has emptied a vat, it is pushed to the filling room platform to be refilled and a full vat is removed from its place at the steam coils along the wall to a position near the delivery window.

The arrangement of having both the oil and store-room delivery windows open into the same room permits the use of the same outside door for making all disbursements from the storehouse.

Paint disbursements are made from five 120-gal. cylindrical tanks which are also located on the oil room floor handy to the delivery window.

Facilities are provided for distributing oil to the two enginehouses by means of portable tanks of 50 gal. capacity. This system of delivery eliminates the necessity of the shop men making frequent trips to the oil room to obtain fuel for tire heaters and other oil burning devices.

#### Project is Not Yet Completed

Complete facilities for the handling of stores material at the Selkirk yard have not yet been provided. Parts of the project at this point are still in the course of construction. In addition to the oil room here described, which primarily serves the engine terminal, another oil house is provided at a considerable distance from the engine terminal, for the storage and disbursement of the oil used at the car repair yard, which is not yet in complete operation.



# Erie Locomotive Repairs Criticized

## I. C. C. Finds Work in Contract Shops, 1920-1923, Greatly Exceeded Road's Own Shop Costs

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION has made public a report finding that the cost of repairs to locomotives and cars of the Erie at outside shops during 1920, 1921, 1922 and 1923 was greatly in excess of the cost of similar work in the railroad's own shops and that a large part of such excess costs was an unreasonable expenditure for maintenance of equipment and not in the interest of efficient and economical management as required by section 15a of the interstate commerce act. This is the latest of a series of reports as to different roads as the result of a special investigation undertaken by the commission. On April 15, 1924, the order covering the investigation was amended so as to broaden the inquiry into matters relating to the repair and operation of the Erie's marine department. This latter feature of the investigation will be dealt with in a subsequent report. The report cites several instances in which it says the cost of repairs to locomotives exceeded the cost of reproduction new of similar locomotives. Commissioners Hall and Cox dissented from the report. Some extracts from the commission's report follow:

### Baldwin Contract of 1920

On August 9, 1920, respondent entered into a contract with the Baldwin Locomotive Works for the repair of locomotives on a cost-plus basis, that is, the cost of material at stipulated prices, and of direct labor, plus 120 per cent of the direct labor cost to cover overhead expense, plus 15 per cent of the whole for profit. All scrap material became the property of the Baldwin plant, and respondent bore all freight charges on materials and on the repaired locomotives as well as the costs of inspection. The eight locomotives repaired under this contract went into Baldwin's shop on various dates between October 2 and November 11, 1920, and were turned out on various dates between February 9 and May 4, 1921.

The total cost of repairs on these eight locomotives, inclusive of freight charges and cost of inspection, amounted to \$267,395.59. Compared with the cost of substantially similar repairs on the same class of locomotives in respondent's shops, the total excess cost of the contract repairs was \$172,361.23. In making comparisons consideration was given to the relative extent of repairs and, with one exception for which allowance was made, the locomotives repaired in respondent's shops received comparable repairs to those in the Baldwin plant. The items of cost in respondent's shops are labor and material, inclusive of shop and store expense, but including no other overhead expense, as respondent's overhead, other than store and shop expense, would not be materially affected by the number of locomotives repaired in respondent's shops.

Respondent contends that under the circumstances the repair of these locomotives at Baldwin's was necessary and did not result in unreasonable expenditures, although the cost was more than it would have been under normal conditions in its own shops. It states that the general run-down condition of its motive power, and the increasing demand for power due to the heavy movement of traffic were the two factors which contributed principally to the necessity for outside repairs.

The class repairs in respondent's shops on an 8-hour day basis averaged about 90 per month during 1920. Respondent concedes that it could have repaired these eight locomotives if its shops had been on a 9-hour basis, but asserts that if the work had been done at overtime rates the cost would have been very little under the contract cost. Our investigators, however, compute that the eight locomotives could have been repaired entirely at overtime rates in respondent's shops at an additional cost of only \$30,037.91, whereas the excess cost at the Baldwin plant was \$172,361.23. The evidence justifies the conclusion that the eight locomotives could have been repaired in the company's shops at a cost materially less than was paid for repairs at the Baldwin plant and would have been available for service much sooner.

The contract between the Baldwin company and respondent was modified February 17, 1921, by reducing the overhead from 120 to 90 per cent, as well as the stipulated prices on certain materials. Under the modified contract three locomotives were repaired with a guarantee that the cost per locomotive would not exceed \$65,000. At the time of the investigation the repair cost on one locomotive

only was available, and no similar comparative cost data were prepared by our representatives respecting the repair of these three locomotives.

On May 14, 1921, respondent purchased 45 so-called "Russian" decapod locomotives which were in need of repairs to render them serviceable. These locomotives were repaired at the Baldwin plant during the months of June, July, and August, 1921, under the modified contract of February 17, 1921, at a total cost of \$304,466.17. In making a comparison with the cost of like repairs to similar locomotives, respondent uses a cost of \$6,279.50 per locomotive, while our representatives show such cost as \$5,785.86. Respondent, however, erred in eliminating a locomotive used for comparative purposes which received classified repairs in an engine house. Our representatives erred as to an item of back pay, respondent's data as to this item being more nearly correct. Making comparisons on this corrected basis, the excess cost on the 45 locomotives would be \$35,177.70.

### Road's Own Shop Output Curtailed

While these 45 locomotives were undergoing repairs at the Baldwin plant, several of respondent's shops were shut down for periods ranging from two to three months. Respondent had 13 shops where classified repairs were performed, the largest being the Susquehanna with a monthly capacity of 23 locomotives, Meadville, 21, Hornell, 18, Jersey City, 15, and Huntington, 9. During the first eight months of 1921 the Meadville, Susquehanna, Hornell, Galion, and Huntington shops were shut down for certain periods and worked only part time during other periods. During 1919 and 1920 respondent's output of classified repairs averaged approximately 90 locomotives per month. During the period January to July, 1921, inclusive, due to the drastic reduction in forces, its output of classified repairs fluctuated between 41 and 69 per month, and averaged only 53 per month. During the last four months of 1921 the output, although greater than the first part of the year, was still approximately 30 repairs less per month than during 1919 and 1920. Based on the performance during 1919 and 1920, respondent's shops were operated at only 65 per cent of their capacity during 1921.

The chief reason advanced for these repairs in outside shops was the financial condition of respondent at that time. The contract with the Baldwin company provided for payment in monthly installments with interest. Respondent concedes that it could have repaired the 45 locomotives if all its shops had been operating, but states that, due to business depression, it was forced to curtail its expenses and close several shops. Respondent could have made a substantial saving by performing these repairs in its own shops, and in the interest of efficiency and economy in operation it should have avoided such excess expenditures.

On October 25, 1923, this proceeding was reopened as to respondent's locomotive equipment and on February 11, 1924, as to all of its equipment. A further hearing was had with respect to repairs to locomotives and cars made during the latter part of 1921, 1922, and part of 1923. During this period there were 213 locomotives repaired in outside shops, 106 of which received classified repairs and 107 unclassified repairs. Written contracts were made with 16 shops. Repairs were also made in three other shops without written contracts. Two of the contracts were made prior to the shopmen's strike of July 1, 1922, and the remainder subsequent thereto.

Although its shops during 1921 were operating at only about 65 per cent capacity, respondent entered into a contract on October 1, 1921, with the Lima Locomotive Works covering the repairs to 10 Santa Fe type locomotives. The contract did not provide for a definite price and, as the costs for repairs amounted to a greater sum than was anticipated, only five locomotives were repaired at that plant. On May 3, 1922, respondent made a contract with the Baldwin Locomotive Works for repairs to the other five Santa Fe type locomotives at stimulated prices.

Respondent owned 60 large Santa Fe type locomotives, which were purchased in 1916 and 1917. It states that its shops were not large enough to repair these large locomotives and it was necessary to have them repaired at outside shops. While respondent has since remodeled certain of its shops to take care of such locomotives, it appears that its corporate officers knew of the incapacity of the company shops during the interval of five years subsequent to the purchase of these locomotives. Moreover, it appears that the repairs to the Santa Fe type locomotives could have been made in its Hornell shop if the smaller locomotives had been transferred from that shop to other shops on its lines.

The practice followed could not be said to make for efficiency and economy in management.

### Cost Plus Contracts Not Uniform

Most of the contracts subsequent to July 1, 1922, the date of the so-called shopmen's strike, were on a cost-plus basis. Three locomotives were sent to American Locomotive Company and seven locomotives to the Baldwin company during July and August, before the execution of any contracts. The first contract executed subsequent to the strike was with the Baldwin Locomotive Works on August 10, 1922. Contracts were also entered into during August with the McMyler-Interstate Company, Cleveland, Ohio, Ferguson Allan Company of Buffalo, N. Y., Crucible Steel Company of Harrison, N. J., and the American Locomotive Company of Schenectady, N. Y. The contract with the American plant provided that a flat price should be made after the inspection of the locomotive. No definite number of locomotives was specified. The four other contracts were on a cost-plus basis. The contract with McMyler-Interstate Company, covering not less than 50 locomotives, provided for the cost of material, cost of productive labor, plus 200 per cent of direct labor cost for overhead, plus 25 per cent of total labor and overhead cost and 15 per cent of material cost for profit, and, in addition, a placing charge of \$300 per locomotive was made; with the Ferguson Allan Company for cost of direct labor, plus 80 per cent for overhead, plus 15 per cent of direct labor and overhead for profit; and with the Crucible Steel Company for the cost of material, cost of applied labor plus 125 per cent for indirect labor, plus 100 per cent of applied labor and indirect labor for overhead, plus 10 per cent of total applied and indirect labor, overhead, and material costs for profit. Respondent agreed to give the Ferguson Allan Company a minimum work of \$50,000 for the first six months, and \$25,000 for the second six months, and to give the Crucible Steel Company repairs to 200 locomotives at a total cost of not less than \$2,000,000. It is to be noted that there is a striking variation of the overhead costs in the contracts made about the same time.

Two contracts were made in September 1922, one with the Austin Machinery Company of Muskegon, Mich., on September 5, for repairs to not less than 50 locomotives, and one with the Buffalo Machine & Iron Corporation on September 18, for a minimum of eight locomotives per month for six months. The Austin Machinery contract provided for the cost of repairs to be determined by the cost of productive labor plus 200 per cent for overhead, plus 25 per cent of labor and overhead as profit, and cost of material plus 10 per cent; the contract with the Buffalo company by the cost of material plus 10 per cent, cost of direct labor, plus 90 per cent for overhead, plus 10 per cent of labor and overhead for profit. An arrangement for repairs was made with Staten Island Shipbuilding Company during the latter part of September. The written contract executed October 25, 1922, provided for repairs at the cost of applied labor plus 110 per cent and cost plus 25 per cent of the material supplied by builder, and 15 per cent of the value of the material furnished by respondent. Two contracts on a cost-plus basis were made in November, one with J. P. Devine Company of Buffalo, N. Y., to cover two locomotives sent to its shop in October, and one with American District Steam Company to cover cost of repairs to a locomotive sent to its shop in October.

In all of the above contracts respondent paid the cost of inspection as well as the freight charges both on material it furnished and on the locomotive. In several instances, such as the arrangements with the Ferguson Allan Company, Buffalo Machine & Iron Corporation, the Devine Company, and the American District Steam Company, the contract provided that if the contractor furnished the materials he would receive payment thereon on basis of cost plus 10 per cent.

The percentage additions under various contracts to productive or applied labor obviously resulted in costs greatly in excess of those in respondent's shops. The Crucible contract, the most striking in this respect, contemplated a percentage addition to the applied or productive labor for indirect labor, overhead and profit of 395 per cent; McMyler-Interstate of 275 per cent; and Austin Machinery Company, of 275 per cent. In other words, for every dollar of productive labor applied, respondent paid \$4.95 to the Crucible Company, \$3.75 to McMyler-Interstate, and \$3.75 to the Austin Company. The total cost of applied or productive labor on 12 locomotives repaired at the Crucible plant was \$144,359.74, and the amount added to productive labor for indirect labor, overhead, and profit was \$570,220.96; the cost of productive labor on 11 locomotives at the McMyler-Interstate plant was \$81,294.65, and the amount added for overhead and profit \$23,560.29; the cost of productive labor on 9 locomotives at the Austin Machinery plant was \$57,667.20, and the amount added for overhead and profit, \$158,584.80. The material used by respondent in the repair of locomotives in its shops averaged 36.9 per cent of the total cost of labor and material, while the material used in the contract shops averaged a much lower percentage of the total cost, being as low as 6.3 per cent in the case of the repairs at the Crucible plant.

The total amount paid for classified repairs on the 106 locomotives was \$3,157,500.60, including \$199,000 for the cancellation of two contracts. The cost of repairing 92 of these locomotives in outside shops was compared with the cost of like repairs to similar locomotives in respondent's shops during the same period. No comparative cost study was made respecting the five locomotives receiving class 1 repairs at the Lima plant and the nine at the Baldwin plant, as no similar repairs were made in respondent's shops during the same period. In arriving at the cost of repairs in outside shops we used the contractor's total invoice, which included materials, labor, and the percentage additions, and to this sum added the cost of materials furnished by respondent, freight on the locomotive, the costs of inspection, and in two instances payments for cancellations. The applied labor in the contract costs includes only the direct physical labor of the men doing the work and does not include superintendence. In computing the cost of repairs to locomotives in respondent's shops we used the cost of labor including shop expenses, and the cost of materials including store expenses. The shop and store expenses included cleaning and handling material, power, heat, lights, etc. The freight charges on the material to the storehouse are included in the company costs. No overhead, however, was added for taxes, depreciation, maintenance, or interest on investment, as such charges would not have increased had the additional locomotives been repaired in respondent's shops, but the allocation per locomotive would have been reduced. A comparison on this basis is proper, as respondent would have saved the excess costs if the repairs had been made in its own shops and its own overhead expense was in no wise diminished by turning these repairs to outside shops.

### Cost of 92 Repairs 438 Per Cent of Road's Shop Costs

The total cost for repairs to the 92 locomotives at outside shops was \$2,820,281.60, while the cost of substantially similar repairs on the same class of locomotives in respondent's shops was \$642,705.54. The total cost in the outside shops was about 438 per cent of the cost of performing the same work in respondent's shops. The total excess above the cost of similar work in respondent's shops is computed to be \$2,177,576.06, and this amount would have been saved had respondent performed the work. There is no uniformity in the amount of excess per locomotive in the different shops, which ranges from \$4,268.02 at the Devine plant to \$78,172.12 at the Crucible plant, but the average excess was \$23,669.30 per locomotive.

The cost of repairs to many of the locomotives was greatly in excess of the cost of similar new locomotives. It is also observed that in one instance the cost of repairs was almost three times, and in several instances almost twice, the reproduction cost of a similar new locomotive.

In many other instances the cost of repairs exceeded the reproduction cost new of a like locomotive. The total cost of the six locomotives repaired at the Staten Island Shipbuilding plant was \$213,604.25, while the reproduction cost new of similar locomotives was \$183,257.60; the total cost of repairs to nine of the 11 locomotives repaired at the McMyler-Interstate plant was \$404,432.61, while the reproduction cost new of similar locomotives was \$354,552; the total cost of four of the nine locomotives repaired at the Austin Machinery plant was \$170,775.72, while the reproduction cost new was \$154,496.

Respondent states that the contracts subsequent to July 1, 1922, were the direct result of the shopmen's strike. It states that, after failing in an attempt to make an individual settlement with its men, it manned its shops in the best possible manner; that the output of its shops would not take care of the increasing demand for power; that the supply of serviceable power was diminishing; and that it investigated every outside shop on its line that possessed a potential power of making repairs, and induced these shops to enter into contracts for repairing its equipment.

None of these contractors, except the Baldwin, American and Lima companies, had repaired locomotives. The Baldwin and American plants were better equipped to perform repair work but were said to be unable to accept all the repair work offered at that time by the various carriers. Respondent states that new locomotives were not available; that it was necessary to furnish an uninterrupted flow of transportation; and that the management considered no expense too great to maintain transportation. Respondent made a settlement with its striking shopmen as of September 28, 1922.

Clearly, economy and efficiency of operation were disregarded in making new contracts and in sending out additional locomotives while negotiations were being conducted for a final settlement with its striking employees during the latter part of September. Negotiations were concluded during the latter part of the month and the strike terminated effective September 28, 1922. However, during the last half of September, respondent made new contracts and sent out 20 locomotives to outside shops for repairs.

Although the strike was settled as of September 28, 1922, and respondent's employees returned to work, respondent continued to pay excessive amounts for repairs to its locomotives in outside



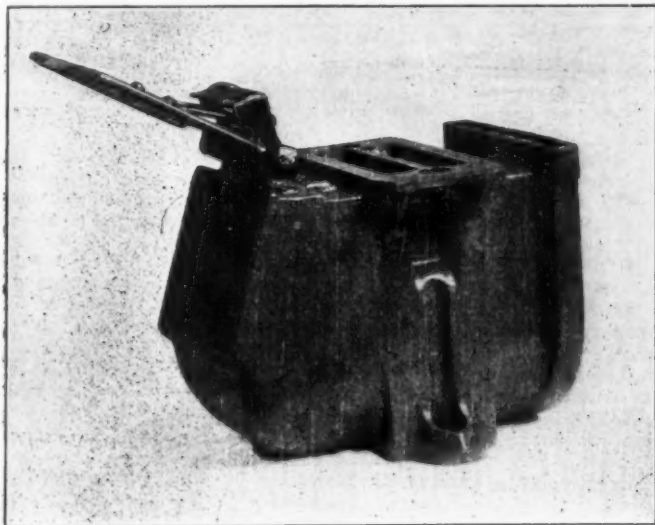
shops even though it could have employed almost an unlimited number of skilled workers. Subsequent to October 1, 1922, 29 locomotives were sent to outside shops for classified repairs, and certain additional contracts were entered into. Respondent states, however, that it desired its equipment to be repaired as soon as possible, and that it felt morally obligated to send further repairs to the contract shops.

#### Criticism Aimed at Costs, Not at Contract Principle

Our criticism here is not directed to the fact that the equipment was sent to outside shops, but to the unreasonable and excessive costs for such repairs at such shops. Clearly, the excessive costs for repairs on those locomotives sent to outside shops prior to July 1, 1922 and subsequent to September 15, 1922, were not incurred in the interest of efficient and economical management. There is also grave doubt as to the immediate necessity for sending out equipment for repairs during the period from July 1 to September 15, 1922, and certain facts should be pointed out bearing on the wisdom of respondent's action in so doing. There was no greater demand for power during this period than during the early part of 1921 when certain of respondent's shops were closed for intervals of from one to three months. As a general policy respondent reduced its shop forces during periods of depression, resulting in a like reduction in the output of repairs. Past experience had demonstrated that the locomotives sent out would not be, and in fact were not, available for service for several months. Respondent's witness, however, gives as an additional reason for sending its equipment to outside shops that such action helped to settle the strike. Assuming, however, that the resort to outside shops was necessary during this period, the great variation in the overhead charges in the contracts executed at about the same time indicates a disregard of efficiency and economy in management, and respondent has not justified the tremendous increase in costs nor the extraordinary allowances for overhead which to a great extent made up such excessive costs. The record compels us to regard these expenditures as improvident.

### Self-Fitting Torsion Spring Journal Box Lid

A NEW DEPARTURE in journal box lid construction has been developed by the Allegheny Steel Company, Brackenridge, Pa., in the Asco self-fitting, torsion spring lid illustrated. The main objects sought in the design of this lid are the elimination of wear on the journal box lug



View with the Lid Open—The Pin is Retained by the Bent Down Scroll

and the provision of a lid which will bear equally on the top, bottom and sides of the box face, consequently preventing dust and dirt from getting into the journal box and cutting the journal.

Referring to the illustrations, the construction and operation of the lid will be at once apparent. The roller bearing

on the box lug increases the spring efficiency and practically eliminates wear. Moreover, reference to the assembled view shows that the spring action is against the center of the lid, causing an equal pressure at the top and bottom of the box face. The scroll is elongated, providing clearance between the pin and the scroll, which allows the lid to go up tight against the top and the bottom of the box face. The elongated scroll also makes the lid independent of the diameter and location of the pin hole or the diameter of the pin. Another feature (present in former lids made by this company) is the turn down scroll which permits the use of a headless pin and also forms a positive lock for the pin.

The Asco journal box lid has been thoroughly tested in service and can be applied by any car man without special training in a fraction of a minute. The tools required are



Parts of the Asco Journal Box Lid—The Spring Retainer is Shown at the Top

a light hand hammer for turning down the scroll and a short pinch bar for snapping the spring retainer into its locked position.

The lid body is made of  $\frac{1}{8}$ -in. pressed steel, properly embossed to provide stiffness. It has a rib on the inside just above the bottom side of the box face to cause any oil which is condensed to flow back into the box. Flanged edges provide greater strength and assist in keeping dust out where high spots exist on the box face.

The scroll has extended ears, the left ear being bent down in manufacture, the right being bent down after the lid is applied to the box. The left ear covers only one-half of the hole in the scroll so as to permit the use of a drift, should it be necessary for any reason to drive out the pin and remove the lid. The eye of the scroll is integral with the lid and is closed by electric welding. The elongated scroll permits the use of a headless pin, eliminating the necessity for apply-

ing rivet, bolt and nut, or pin and cotter, besides being lighter in weight than such parts. The pins can be made from  $\frac{3}{4}$ -in. round scrap iron.

The torsion spring is made from electric steel, oil tempered rod, wound cold and is designed to stand up under the severest tests. At the top bearing point of the spring a roller is attached in the manufacture of the spring. This eliminates the frictional drag experienced with flat springs, as well as the severe wear on the box lugs caused by the flat spring lid. The spring retainer is separate from the lid body and is the part which holds the spring tension, all of



Self-fitting Torsion Spring Lid Cover Closed

which is exerted against the box lug, pin and the center of the lid. The retainer is curved properly to insure easy application and is embossed along the lower lip for additional strength.

The Asco lid is designed to meet all requirements of the A. R. A. specifications. It will fit any journal box having an A. R. A. lug, or even those somewhat outside of the tolerances as far as the location and size of the lug and pin hole are concerned.

## Report on Test of Southern Pacific Train Control

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION has made public a letter from E. H. Groot, Jr., director of its Bureau of Signals and Train Control, to W. R. Scott, president of the Southern Pacific lines in Texas, written as a substitute for a previous letter regarding the results of the preliminary inspection by the commission's representatives of the Southern Pacific train control installation. An earlier report, which was sent to General Manager Dyer of the Southern Pacific, was the subject of a recent conference at the office of the commission, attended by representatives of the railroad and of the National Safety Appliance Company.

After further investigation, conference and demonstration by former letter, dated September 29, 1924, to General Manager Dyer concerning the preliminary inspection of the National Safety Appliance Company's automatic train stop device as installed on the 20-mile single track section of the Southern Pacific between Brentwood and Tracy, California (this preliminary inspection having been made in accordance with the Commission's circular, or press

notice, of June 9, 1924) is withdrawn and the following substituted:

1. A signal governing the entrance to a block may indicate stop due to local signal trouble and the track magnet indicate clear at the same time.

The specifications and requirements covering this point are as follows:

Paragraph 1, General Requirements. "An automatic train-stop device shall be effective when the signal admitting the train to the block indicates stop, and so far as possible when that signal fails to indicate existing danger conditions." Also,

Paragraph 2, Design and Construction. "The apparatus shall be so constructed . . . as to perform its intended function (a) in event of failure of the engineman to obey the signal indications; and (b) so far as possible when the signal fails to indicate a condition requiring an application of the brakes."

2. The track magnet may be displaced or removed without affecting the operation of the signal system, and, under these conditions a stop signal and an automatic brake application would not result at the signal and magnet in the rear.

The specifications and requirements are as follows:

Paragraph 3, Design and Construction. "The apparatus shall be so constructed that it will, so far as possible, perform its intended function if an essential part fails or is removed, . . ."

3. At some distant signals track magnets are so located that an automatic brake application made thereat will not stop a train proceeding at high speed before it reaches the home signal.

Further, the staggered signals between sidings are located so close to each other, that, should opposing trains leave such sidings under clear signals, automatic brake application at these staggered stop signals might not prevent a collision.

The specifications and requirements are as follows:

Paragraph 3, General Requirements. "An automatic train-stop, train control, or speed-control device shall be operative at braking distance from the stop-signal location if signals are not overlapped, or at the stop-signal location if an adequate overlap is provided."

4. Should the condenser which bridges the contact points of the magnet relay break down and short, a false clear failure would result.

The specifications and requirements are as follows:

Paragraph 3, Design and Construction. "The apparatus shall be so constructed that it will, so far as possible, perform its intended function if an essential part fails or is removed, or a break, cross or ground occurs in electric circuits, or in case of a failure of energy."

5. The forestalling valve is experimental and while the principle appears to be correct, comment is reserved until this valve can be further inspected and tested under actual railroad operating conditions.

6. The clearances in the valve assembly of the duplex control valve are such that freedom from dirt, oil, gum, etc., must be maintained to insure proper functioning and to prevent false clear failures.

Further, should the duplex control valve strainer or the connection between the stop valve and duplex control valve be stopped up by accumulation of scale, dirt, ice, etc., a false clear failure would result.

The specification and requirements are as follows:

Paragraph 14, Design and Construction. "The apparatus shall be constructed, installed, and maintained as to be safe and suitable for service. The quality of materials and workmanship shall conform to this requirement."

It is felt that the importance of these criticisms is very great but they are not intended, nor are they to be taken, as a condemnation of this or any other device in connection with which similar criticism may be offered in future.

We understand that you have undertaken to see that the system is properly protected from the entrance of foreign matter, if there is any indication that it is not fully protected at present.

7. The armature nut is not so secured as to insure that it cannot work loose and back off, preventing the valve stem from rising and affecting the proper operation of the valve.

The specifications and requirements are as follows:

Paragraph 14, Design and Construction. "The apparatus shall be so constructed, installed, and maintained as to be safe and suitable for service. The quality of materials and workmanship shall conform to this requirement."

8. The use of a rubber gasket in the application valve of the stop valve is dangerous. The rubber may be cut and adhere to the seat in such manner as to cause a false clear failure.

The specifications and requirements are as follows:

Paragraph 14, Design and Construction. "The apparatus shall be so constructed, installed, and maintained as to be safe and suitable for service. The quality of materials and workmanship shall conform to this requirement."

With the understanding which we have that the application valve



in the stop valve on one of the engines used in the preliminary inspection, and which was the object of this criticism, was of an "obsolete design" which has been removed and discarded absolutely, we are glad to limit this specific criticism to this obsolete type of stop valve in which a rubber gasket was used.

With respect to the reliability of the rubber disk used in the new form of this valve, it is felt that the test of actual service over a more or less extended period will be necessary before a conclusion can be safely reached.

9. Where not already so located, the release cock should be installed where it cannot be operated while the locomotive is moving.

The specifications and requirements are as follows:

Paragraph 6, Design and Construction. "The apparatus shall be so constructed as to prevent the release of the brakes after automatic application until the train has been brought to a stop . . ."

The object of this and similar inspections is that of constructive criticism; the pointing out of such matters as may be helpful to the carrier in checking an installation against the specification and requirements of the Commission, and comments concerning such other related points as our necessarily brief inspection may develop. The foregoing criticisms and comments are offered accordingly. This letter is addressed to you notwithstanding the fact that the installation in question is on the lines of the Pacific System, in view of the fact that you represented that system in our recent conference.

## Best Methods for Bringing About Co-operation

### Employees Should Be Studied Critically to Develop and Place Them to the Best Advantage

By J. C. Clark

(This is one of the contributions submitted in the RAILWAY AGE's contest on co-operation. Mr. Clark has written a number of articles for this publication on the personnel question.)

**C**O-OPERATE: To act or work together.

It is easy for two persons with the same purposes in life and whose personalities harmonize to co-operate, each making up the deficiencies that may appear in the performance of the other. The greater the number of persons working in a group the more difficult it is to obtain complete co-operation, because the purposes become more obscure and it is not so easy for an individual to harmonize his personality with that of a larger group.

In a large railroad organization this difficulty is multiplied many times, partly because the purpose is perhaps entirely obscured to a large number of the workers and only thoroughly appreciated by a very few. The purpose of a railroad organization is, of course, to produce safe, adequate, and satisfactory transportation service at a reasonable cost to the public but most railroad officials or employees if asked the question would not make this reply. One reason is that very few railroad employees or officials are able to see clearly and keep constantly in mind the relationship between their particular job and the full process of transportation. It would appear then that one way to promote co-operation and efficiency would be to give railroad employees and officers sufficient instructions in all the processes of transportation to give them a bird's eye view of the whole and a working knowledge of the departments with which they come in contact.

#### Promoting Co-operation

This can be done in a large number of ways—foremen's meetings, bringing together the foremen in various departments to discuss the various problems that arise affecting more than one department. Much can be done through company magazines; much could be done by the use of the moving picture—films could be produced tracing a piece of freight showing the importance of the bill of lading, the waybill, and every other detail which effects the movement to destination.

A great many people are unable to see beyond their own particular job unless it is brought forcibly to their attention, but if they once get a picture of the full process their interest is stimulated and their service improved because they are able to see the problem of the other fellow, and

human nature is such that nearly every one has a natural desire to help the other fellow if he sees the opportunity.

#### A Square Deal

There are a number of other ways by which group interest can be stimulated and co-operation developed. Athletic contests have a certain value in this respect but they do not reach all employees; shop or office quartets or other musical organizations are valuable but they do not reach every one; as a matter of fact, there is nothing that will promote co-operation throughout an entire organization that does not personally reach each individual employee. If each employee knows that he is being fairly treated, not only by his immediate superior but by what he calls the "company" his co-operation is almost sure to follow.

The big question is, how is each employee to be assured of a square deal in a world where human prejudice controls a very large percentage of the actions of every human being. There is no way in which human prejudice can be entirely eliminated but it is possible to reduce the element of prejudice to a minimum. This can be done by the use of the method of limited impressions which has been described and commented upon in the columns of the *Railway Age* (March 18, 1921, page 719), and which has been tried out very successfully in a number of industries and to some extent on the railroads. This method consists primarily in selecting the most important qualifications necessary in an employee in some particular position or class of positions, then securing independently as many ratings as possible from as many different sources as possible on the given qualifications.

If two persons are asked to give an opinion of a third person the replies will be couched in different language and will describe the various characteristics of the third person that most appeal to those making the reports. The results cannot be compared but by selecting qualifications as indicated above a percentage rating may be obtained that indicates very accurately the employee's value to the service, because the method described eliminates personal prejudice insofar as it is possible to eliminate this element.

#### Personal Records

It will be found, however, that the first necessity in developing a fair and impartial estimate of the value of an employee's service is a personal record system which will take care of the records in such a way that the complete record is available at a glance. The employee's personal record card must also provide a way to indicate the date

when reports are due from those familiar with the employee's service. The employee's card should also carry all of the other details of service that are necessary and should be open to inspection at any time to the employee; furthermore, employees should be urged to examine their own record at frequent intervals and make a complaint to the proper authority in case they find anything with which they are not satisfied. This gives the supervising officer the opportunity to convince the employee that he is mistaken and thus make a better man of him or else admit that the record is wrong and make the necessary change.

Some form of visible card record is necessary to develop such a system. By visible card record is meant card records placed in holders in such a way that a narrow margin is visible when placed in a cabinet or panel. On this visible margin is placed the employee's name, file number, occupation and various other items of information. In addition to this colored signals can be used to show the date when progress reports are due, seniority dates, watch inspection reports and several other items that are essential in compiling statistical data and in checking up on each individual employee.

Employees personal records in the past have been the source of a great deal of irritation to employees and this has resulted in ill feeling in many cases, and in some cases actual hostility. The personal record is the one thing that concerns individually every employee and unless it is based on principles of fair play and open dealing a suspicion will always lurk in the mind of the employee as to the use that is being made of it.

### Discipline

The question of discipline has always been associated in the mind of the employee with his personal record and discipline has been greatly abused on a great many railroads. As a matter of fact, the term "discipline" as used on the railroads has come to be synonymous with punishment while it should be synonymous with training. If an employee is disciplined or punished for a fault without being instructed how to avoid a repetition the result is likely to be nil. Discipline should always carry the idea of training to the mind of the official as well as the employee. The only legitimate object of discipline is to improve the service as a whole and it should not be forgotten that discipline administered to an individual employee very often effects an entire group, especially if the discipline has happened to be unjust. It puts just that much more distance between the employee and the officer and makes complete co-operation harder to obtain. Discipline is training and the only object of discipline is to improve the service. If the officer who has the handling of discipline keeps these two thoughts firmly in mind he will go a long way toward securing the co-operation of his men.

In a great many cases the discipline record is practically the only thing shown on the employee's personal record but the personal record should be made a complete record of the employee's service; in addition to giving the usual personal information it should give the rating record referred to above, separate items showing watch inspection, signal tests, personal injuries, compensation received, insurance carried and any other items that may be necessary for the various classes of employees. When the employee by personal inspection finds that *his company* is taking a real personal interest in his service he is bound to return that interest by giving his co-operation more freely and enthusiastically.

There is a vast difference between passive acquiescence and enthusiastic co-operation. If a man is simply working for a living because he has to and can see nothing better in the future he will do only enough to get by and very little more. If he feels that he is part of a vast machine

producing transportation that is a vital necessity to the nation; that *his company* is interested in his progress and is giving him a fair show, he will give enthusiastic co-operation. That means better railroad service to the public, more money for the security holders and higher wages for himself. But co-operation is a personal matter. Athletics and other similar activities are good but until the individual employee feels that he is getting a square deal and is able to check up on it in his personal record; until he knows that he is in direct line for a better job and will get that job if he is better qualified than the man next to him, full co-operation is impossible.

### The Importance of the Foreman

The key man in any organization is the foreman. If he has not been properly trained, not only in the performance of the work of his department but in the handling of men, it will be difficult to secure efficiency and co-operation. The foreman comes in direct contact with the men and it is often the petty jealousy and rivalry of foremen which makes life miserable for the men under them. The training of foremen cannot be left to individual initiative; each department should have its own training school with a carefully thought out method of instruction. Probably the best results can be achieved through foremen's meetings assisted by correspondence courses and carefully chosen lectures. If the foremen already in the service and those who are being prepared for foremen's work can be made to think for themselves and become enthusiastic about their work the battle is won. It requires patience and leadership to accomplish this result. If foremen's courses are conducted on a basis of compulsory attendance results will be disappointing but if the foremen themselves take enough interest to secure good attendance at foremen's meetings and provide enthusiastic discussion the popularity of the move will grow from their enthusiasm.

The safety movement on the railroads has proven the value of suggestions coming from the rank and file. This idea should be carried further in all foremen's meetings. Suggestions should be invited covering every phase of operation. The individual who makes a suggestion that is approved and adopted after thorough discussion by his fellow employees cannot help but take a deeper interest in the organization of which he is a part. It is only human nature to crave recognition for original ideas and even the man who makes a suggestion that is not approved is educated and stimulated in such a way that his next suggestion will be better than the first. The foreman especially should be made to realize and to clearly see that there is more real satisfaction in achievement than in authority or promotion. The man who works whole heartedly to achieve a desirable object will get promotion whether he wants it or not for the simple reason that the laws of compensation will take care of him. We cannot take out of this life any more than we put in and he who puts the most enthusiasm into his life's work will surely get the most out of it.

### Organization

A great deal of friction seems to exist in some quarters because organization is not right. The jurisdiction and authority of each officer in each department should be clearly defined so that there will be no chance of any misunderstanding. There are many cases where the same officer or employee may be responsible to two separate departments for different parts of his work, on the other hand, there are many cases where two departments each have a man charged with the same piece of work. Either condition is almost sure to create friction which is directly opposed to co-operation. A great many of these conflicts have grown up in the natural course of development. An assistant superintendent once remarked "that after being on his job for more than a



year he was still reaching out in various directions to see just how far his jurisdiction and authority went," he also said "that from all appearances he could extend both as far as he liked" because he found most of his associates were willing to surrender responsibility but were quite willing to claim credit. It would be easy for any railroad to make an organization survey and define fairly accurately the jurisdiction and authority of each department and of each officer. The difficulty arises when the attempt is made to keep certain types of officers in their own territories. The ambitious man with plenty of energy and enthusiasm is always reaching out beyond his own job. This is a good thing in a way but it invariably creates jealousy and ill feeling in some quarters and does not promote co-operation. However, an organization audit is a good thing and will help to show more definitely the various lines of authority and jurisdiction which will also promote a feeling of unity within the various departments.

### Leadership

A railroad officer once stated in a committee meeting that he forced his men to co-operate with him. Though the statement is absurd on the face of it no one took occasion to contradict it. Co-operation cannot be forced. Railroad management must systematically develop leaders who can inspire confidence and trust and have the imagination necessary to keep the big vision of railroad transportation and the part it plays in the life of the nation before the rank and file. If the employee is given steady employment, an equal opportunity for advancement, a reasonable wage and satisfactory working conditions he will no doubt be contented in his employment but the power of leadership and a common purpose is necessary to secure his enthusiastic co-operation.

Some men are so constituted that they always think they are getting the worst of it but the method of limited impressions will eliminate this class before they have been in the service very long. Other men have outside interests that engross them to such an extent that they are not interested particularly in the common purpose of railroad operation. Leadership is necessary to induce this class to transfer at least a good part of their enthusiasm from their individual interests to that of the occupation which provides them a living. The very effort necessary on the part of one or two executive officers on a railroad to develop the ideas set forth in this article will also develop leaders who are capable of carrying on the work and developing it.

Among the men and women working on the American railroads today there are thousands who are capable of becoming leaders in their groups and hundreds who are capable of becoming leaders in the railroad business. The opportunity of developing this leadership exists now as it has always existed but there has so far been no systematic and sustained effort made to this end, though recent developments indicate that a great many executives are thinking about it.

### Summary

To summarize briefly: In order to promote co-operation and efficiency it is first necessary to select the best men available and place them in the organization in the positions for which they are best qualified through a well organized employment service. Provide a personal record system which will show a complete and unbiased record of each employee's service. Then develop each individual unit through educational work always being on the look out for the man of ability and imagination who is able to put heart into the organization by his leadership.

## Interstate Commerce Commission's Safety Work

Effects of Commission's Bureaus Summarized by A. G. Pack  
Before New England Railroad Club

**I**N A PAPER before a meeting of the New England Railroad Club at Boston, Mass., on November 11, A. G. Pack, chief inspector, Bureau of Locomotive Inspection, Interstate Commerce Commission, presented a summary of the accomplishments of the Bureaus of Safety and Locomotive Inspection in the administration of the Safety Appliance Act, the Hours of Service Law, the Accident Reports Act of 1910, the Locomotive Boiler Inspection Law of 1911, and the subsequent amendment of this law in 1915 extending the jurisdiction of the Boiler Inspection Bureau to the entire locomotive and tender.

Following his introduction, Mr. Pack briefly summarized the provisions of the various acts, under the authority of which the Bureau of Safety conducts its operations, and then took up the work of the Locomotive Inspection Bureau. Concerning this he spoke in part as follows:

### Work of the Bureau of Locomotive Inspection

In 1911 there were approximately 63,000 locomotives coming under the jurisdiction of the law. This number has steadily increased until at this time there are 70,700 locomotives being reported to the Bureau of Locomotive Inspection. During the past 20 years, the number of locomotives on Class I railroads has increased from 46,743 to 65,008, while the tractive force has increased from 1,065,847,292 lb. to 2,547,433,377 lb., an increase in the number of loco-

motives of 39 per cent with an increase in tractive force of about 141 per cent, about  $3\frac{1}{2}$  to 1.

Since the law has been in effect there have been inspected by federal inspectors of locomotives 739,478 locomotives, or an average of 64,574 per year. Of the total number inspected 457,280, or 60.4 per cent, were found with defects which should have been repaired in accordance with good sound practice before they were put in use. Of this number 48,916 were found with defects constituting violations of the law and the rules and regulations established thereunder, for which special notices for repairs were issued upon the carriers ordering them withheld from service until proper inspection and repairs were made.

During this period only nine formal appeals have been taken from the action of our inspectors, which indicates that good judgment has been used by them in the performance of their duties. Of this small number of appeals the decisions of the inspectors were fully sustained in five and reversed in four.

There have been investigated 9,567 accidents due to the failure of some part or appurtenance of the locomotive or tender, resulting in the death of 667 persons and the serious injury of 10,862 others. Every locomotive accident is an indication that there is something wrong either in the condition of equipment or the method of operation. It is difficult to form an approximate estimate of the importance

of an impartial and thorough investigation of all accidents and the publication of complete and unbiased reports.

There are no authentic records, by which a comparison of boiler accidents can be made, prior to the enactment of the Boiler Inspection Law. A comparison, however, of the fiscal year ended June 30, 1912, the first year of the law, with the fiscal year ended June 30, 1915, is of interest. For instance, during 1912 there were 856 accidents resulting in the death of 91 persons and the serious injury of 1,005 others. During 1915 this number had been reduced to 424 accidents with 13 killed and 416 others injured, or a reduction of 50 per cent in the number of accidents, 85.7 per cent in the number killed and 53.5 per cent in the number injured.

#### Locomotive Inspection

Notwithstanding the increased number of locomotives now in use, their size and complexity, and the additional duties and responsibilities added to the Bureau of Locomotive Inspection, without an increase in personnel or appropriation to carry into effect the requirements of the law and the unsatisfactory conditions existing on the railroads as a result of the shopmen's strike, our records show that the number of accidents caused by the failure of parts and appliances of the boiler only, were reduced during the fiscal year ended June 30, 1924, as compared with 1912 by 54 per cent in accidents, 41 per cent in killed and 55 per cent in injured.

This evidently indicates an improvement in the condition of boilers and appurtenances, which not only promotes the safety of operation but must of necessity add to the efficiency and economy thereof, which I do not believe would have been accomplished had it not been for the force and effect of the law. One of the principal reasons why the law has had such a beneficent effect in reducing the number of accidents is, I believe, because it requires all accidents, even those of a minor nature, to be investigated and does not confine investigations to the more spectacular ones. When accidents are investigated steps are usually taken to prevent recurrences so far as possible.

#### Relation of Maintenance to Safety and Economy of Operation

There is an inseparable relation between locomotive maintenance and the safety of train operation. There is an inseparable relation between locomotive maintenance and the efficiency and economy of operation. Every engine failure carries with it the potential of a serious and fatal accident, with a heavy expense and delay to traffic, which cannot be estimated.

To properly maintain locomotives at a minimum of expense requires adequate facilities and tools. The first cost of these is of course heavy, but any reasonable expenditure is ultimately a paying proposition. The quality of material used in construction and repair of locomotives is of vast importance, the first cost of which is most frequently underestimated. Purchasing agents too often buy in the cheapest markets without regard to the service required. The quality of material should be a first consideration. It has been brought to my attention on many occasions that purchasing agents buy cheap and inferior material against the judgment of the mechanical officials whose judgment is based on years of practical experience. This is a false economy because it cost just as much in labor and money to fabricate poor material as it does to fabricate the good while the service rendered is far less satisfactory.

Safety, efficiency and economy of locomotive operation has influenced the application of brick arches, superheaters, feed water heaters, thermic syphons and many other appliances in large numbers, which must be properly maintained if the results are to be accomplished for which they are applied. The present day locomotives are large complex machines that

will not perform safe and efficient service without current inspection and repair. They should be brought to the shop or roundhouse at least once every 30 days and given a thorough inspection and repair by competent and well trained mechanics, and put in condition to serve another 30-day period with a minimum of so-called "running repairs." If this is done once each 30 days it will greatly reduce the number of engine failures and train delays and save a heavy expense in operation. The old adage "A stitch in time saves nine" is unquestionably applicable to the repair of locomotives.

Locomotives should be brought to the shop at least once every 12 months, thoroughly gone through and inspected and tested, and all defects needing repairs made before they are again put in use. Thorough inspections are important, otherwise defects which may result seriously cannot be found and repaired. Many of the most serious wrecks involving the loss of life and heavy property damage may be traced directly and indirectly to the defective condition of motive power.

#### The Importance of Stable Employment

A most important requirement in the matter of maintenance of equipment is to have a corps of competent, steady, reliable and contented employees. We must have contentment if the best results are to be obtained. Discontent and confusion is not conducive to the best results. Discontent and confusion among men are bound to ensue when employment is uncertain and irregular. There is nothing which so adversely affects economy as to tear to pieces the mechanical organizations each month or at frequent intervals, or to fluctuate its personnel with every temporary traffic change. Steady employment at remunerative wages brings about a satisfaction that is hard to disrupt, while on the other hand when men are treated as machines and laid aside without regard to consequences and without a good sound reason, it brings unrest and disloyalty and hardships not only upon the men and their families, thrown out of employment, but upon everyone connected with the railroad organization.

I appreciate that revenues cannot be disregarded when making expenditures, but with careful consideration and foresight, expenditures can be anticipated with sufficient accuracy and the forces so regulated as to provide steady employment and more uniform practices. If equipment is to be maintained and business properly handled the required amount of money must be provided. It must be spent during the year, and can be spent to a better advantage when it can be more nearly distributed over a 12-month period, than when appropriations are made on a monthly basis.

#### Repair Work Should Be Uniform

Equipment cannot be properly and economically maintained if repairs are neglected until the busy season comes. It is then that the equipment should be in revenue service and not in the shop. It is then that the transportation department is pressing for motive power and the shippers are clamoring for cars, therefore, in keeping with sound management it should be repaired during dull periods and be available when the rush comes, if traffic is to be safely and satisfactorily handled.

Mechanical officials should be given greater voice than they now exercise, in most instances, over their organizations and expenditures and held strictly responsible for the results. We must have team work in all walks of life, if civilization is to keep pace with the ever recurring changes. Using the old slang phrase, "passing the buck," or shifting responsibility is not conducive to the best results. There has been too much of this on the railroads.

The Bureau of Locomotive Inspection is striving to help the railroad officials accomplish just what they desire—good, safe locomotives.



## General News Department

**Representative Upshaw** has introduced in Congress a bill, H. R. 11,033, to require automobiles and other vehicles to stop at railway grade crossings.

The **House committee** on interstate commerce has decided to begin hearings in the latter part of January on the Gooding fourth section bill, which was passed by the Senate at the last session of Congress. Those in favor of the bill will be heard on January 20, 21 and 22, and those opposed to it on January 27, 28 and 29.

The **South Eastern Association of State Railroad Commissioners** was organized as a permanent body at Atlanta, Ga., on December 16, succeeding the temporary association which was started in 1921. The president is A. J. Maxwell, of North Carolina (Raleigh). The commissioners of Louisiana and Kentucky, not yet affiliated, are to be invited to join.

The tug boat "dispatcher" who regulates the operations of the boats of the New York Central in New York harbor is making the experiment, in cooperation with the Radio Corporation of America of sending his orders to a boat by radio. This experiment, which is to continue for a month, is carried on in connection with tug No. 18, that boat having been fitted with a sending apparatus. The code signal of the tug is KFTQ.

The paper bought by the Pennsylvania Railroad for use during the year 1924 has aggregated an estimated quantity equal to 915,720,117 standard size letter sheets; which number of sheets, laid end to end, would extend 144,526 miles. The storekeeper who makes this estimate calls attention to the costliness of paper—sometimes for a brief period it costs more than the cost of rails—and asks that scratch pads be used on both sides. Other economies also are suggested.

The locomotives inspected by the Bureau of Locomotive Inspection in November numbered 5,143, of which 2,366, or 46 per cent, were found defective and 283 were ordered out of service, according to the Interstate Commerce Commission's monthly report to the Senate on the condition of railway equipment. Of 98,723 freight cars inspected by the Bureau of Safety 3,582 were found defective and of 1,773 passenger cars 15 were found defective. During the month 38 cases, involving 253 violations of the safety appliance acts, were transmitted to various United States attorneys for prosecution.

"The Barker Foundation," a trust fund of \$750,000, has been established by the initiative of Mrs. Howard M. Spaulding, of Chicago, daughter of the late John H. Barker, to provide pensions for employees of the Haskell & Barker Car Company, Mich. City, Ind., now a part of the Pullman Company. Under the terms of the foundation employees who have reached the age of 70 years, and who have been in the service of the company for 15 consecutive years, will receive pensions ranging from \$30 to \$45 a month. Special provision is made for employees who were 50 years old when the Haskell & Barker Company was taken over by the Pullman Company, in 1922, and who had served 15 consecutive years.

Three thousand, nine hundred dollars is the monthly saving which has been made by the Lehigh Valley by discontinuing the operation of a local freight train between Ithaca, N. Y., and Geneva, about 40 miles. This is the report by the automobile people, who say that since the substitution of a truck and trailer on the highway, to care for this local merchandise movement, there has been a decided reduction in the damages to goods; this because "small consignments were knocked about by frequent stopping of the freight cars." The cost of operating a freight train was, according to this statement,

\$4,816 a month, as compared with \$900 a month which the railroad company pays to the truck operator.

The **Veterans' Association of the Northern Pacific** has been formed to perpetuate old friendships, promote the interest of employees and develop the historical record of that road. The enrollment of members is in progress at each of the 12 division superintendents' offices, at the offices of the four shop superintendents and at off-line offices. Any employee who has served the Northern Pacific in any capacity for 30 years or more is eligible to membership. The charter roll will remain open throughout the company's lines until January 1. The officers of the association are, president, Thomas R. Sloan, Detroit, Minn., a conductor retired after 40 years of service; chairman of the association and of the board of directors, J. M. Hannaford, St. Paul, former president of the Northern Pacific; vice-president, George A. Fellows, freight agent at Spokane, Wash.; secretary-treasurer, R. H. Relf, St. Paul, assistant secretary of the Northern Pacific. A distinctive gold button bearing the Northern Pacific monad, the figure "30" and the words "Veterans' Association" is supplied each member.

### Eight Passengers Killed in

#### Derailement at Chippewa Falls

Eight persons were killed and seven injured when the cafe observation car on the rear end of an eastbound Minneapolis, St. Paul & Sault Ste. Marie passenger train left the rails and fell off a bridge, 60 feet, into the Chippewa River, at Chippewa Falls, Wis., on December 20, about noon. The car lodged upside down on the bottom of the river with the rear end remaining above the surface of the water. The derailement occurred at a switch, but the cause has not yet been definitely ascertained.

### The Mutual Beneficial Association

#### of the Pennsylvania Railroad

This well known organization of employees of the Pennsylvania Railroad reports remarkable savings from its co-operative stores, restaurants and other institutions. The candy bought through the association in Boston for Christmas this year (up to December 5) amounted to nearly 15 tons, all in five-pound boxes. The price was \$1.60 a box, at which figure it is estimated that the saving, compared with ordinary prices, amounted to \$8,000. The purchase of coffee through the association has been going on for several years, and it is estimated that the total quantity bought has been 1,000,000 lb.; estimated savings \$50,000. This association was the first organization to encourage the buying of railroad stock by employees; and to date 23,803 shares of Pennsylvania Railroad stock have been bought; total amount \$1,211,518.

### Economic Association to Discuss Transportation

A round table conference on transportation will be a part of the program of the annual meeting of the American Economic Association in Chicago. The conference will take place at 2 p. m. on Tuesday, December 30, at the Congress Hotel, Chicago. Ten-minute papers will be presented by five authorities on traffic and transportation, following which the subjects will be thrown open for discussion. Professor William J. Cunningham of Harvard University will act as chairman.

The papers which will be read are as follows: "What Should Constitute a Single Cultural Course in Transportation?" by Sidney L. Miller, assistant professor of economics, University of Wisconsin; "The Place of Transportation Instruction in the College and University Curriculum," by Lewis C. Sorrell, assistant professor of transportation and communication, University of Chicago; "Balancing the Cultural and Vocational Phases in Traffic Management Courses," by Wayne E. Butterbaugh, director of

education, traffic management department, LaSalle Extension University; "What Can the Railroads Do to Enlist the Services of University Men Who Are Attracted to Transportation Work," by Winthrop M. Daniels, Thomas DeWitt Cuyler professor of transportation, Yale University; "The Railroad Viewpoint Toward Traffic Education," by Kenneth F. Burgess, general attorney, Chicago, Burlington & Quincy.

### Radio Aids Against Storm

The radio played an important part in the western railways struggle against the snow storm and extremely cold weather which swept over the country last week. At one time or another virtually all of the Chicago broadcasting stations assisted the railways in locating trains which could not communicate with headquarters on account of breaks in the telegraph lines. The disruption of the telegraph service was the worst handicap that the railroads had to contend with, as there was not a heavy snowfall except in the northwest, where trains on all lines were delayed from one to several hours. The severe cold, however, caused numerous engine failures so that many trains were far behind time. The lines running from Chicago to St. Louis were particularly hard hit. Train schedules were generally back to normal by Sunday, December 21.

### Suits Challenging Rights of Auto Buses

The New York, New Haven & Hartford and the United Electric, have entered complaints in the Superior Court at Providence, R. I., against twenty persons and corporations who are operating motor bus lines in Rhode Island. Against two of these concerns, temporary injunctions have been granted, one running between Providence, R. I., and New London, Conn., and the other between Fall River, Mass., and Newport, R. I. It is said that the injunction against the latter is permanent. Hearings in relation to other defendants will be held on December 29.

Among the lines called into court are two between Providence and Boston; two between Providence and Fall River; three between Providence and Attleboro, and lines between Boston and Woonsocket, Providence and Worcester, Providence and Taunton, Providence and Springfield, Providence and New London, Providence and Hartford, Providence and Southbridge, and Fall River and Pawtucket.

At a hearing in Hartford, Conn., on December 22, on the petition of a concern proposing to operate a bus line between Hartford and Waterbury, an officer of the New York, New Haven & Hartford said that the railroad lines of that company on which business has fallen off because of automobile competition, and which may have to be abandoned because of inability to earn operating expenses, aggregate 261 miles in length.

### Labor Board Asked to Void Southern

#### Pacific Agreement with Enginemen

The conference committee of managers, representing the Western railways, filed a petition with the Railroad Labor Board, on December 22, asking that the board suspend and, after hearing, set aside the settlement made by the Southern Pacific with its enginemen and firemen on December 16. This settlement awarded wage increases to the enginemen of approximately six per cent without making any changes in the existing working rules. The Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen had previously taken strike votes in which it is reported that 96 per cent of the members voted to strike if their demands were refused. The Labor Board deferred action on the appeal for a week or more. The conference committee declared that this settlement tends to make necessary an advance in railway transportation rates in the Western territory, and cited a provision of the Transportation Act which authorizes this board to set aside a settlement of a dispute between a railway and its employees if this "Involves such an increase in wages or salaries as will be likely to necessitate a substantial readjustment of the rates of any carrier." The committee also called attention to the decision of the Labor Board, No. 268, in the dispute between the Western railways and the engine service Brotherhoods which granted a six per cent

increase in wages to the employees on condition that working rules, which the railways have claimed are restrictive and burdensome and unnecessarily increase operating expenses, be modified. Attempts of the brotherhoods to force agreements, similar to that with the Southern Pacific, on other roads were predicted. One such attempt has already been made. The conference committee pointed out that the Southern Pacific settlement increased existing rates of pay without modification of the burdensome rules, as provided in the decision, and was forced by strike threats.

### B. & O. Public Relations Committee

The Central committee on public relations, of the Baltimore & Ohio, held, at Baltimore, on December 9, an all-day conference with representatives of the 150 local committees on public relations, representatives of the general and local committees on safety, and representatives of the committees which follow up freight claims. In addition, a dozen general officers including the president and all of the general superintendents, participated in some of the proceedings. These officers, and others, represented the operating, the traffic, the legal, the accounting and the relief departments, about 300 persons in all. The purpose of the meeting was to lay plans for promoting concerted efforts on the part of the local committees so that the public relations committee and the other two committees named can co-ordinate their efforts.

A notable feature of the conference was the carefully prepared report or agenda which reviewed the work that has been done in the fields mentioned, and presented a succinct program for the future. The spirit of this pamphlet is indicated in the opening pages by the motto—

PREVENTION—Don't Risk  
CONSERVATION—Don't Waste.  
PREPAREDNESS—Don't Delay.

The review of what has been done by way of prevention says that safety work began on this road in 1910. Since 1919 over 2,000,000 observations have been made on automobiles crossing the railroad company's tracks. An average of one out of every six of these drivers was noted as careless. The railroad company has organized among its employees, numerous "Careful Drivers' Clubs." These employees (who own motor vehicles) are provided with metal signs to attach to their cars reading "THIS CAR STOPS AT ALL RAILROAD CROSSINGS." These clubs now have 10,000 members. The safety department is now distributing two million leaflets to automobile users and others.

It is found that on the Baltimore & Ohio, 83 per cent of the highway crossing accidents have occurred where the view of the tracks was unobstructed. In a period of 21 months, there were, altogether, 1,064 highway crossing accidents on the Baltimore & Ohio, of which 76½ per cent did not result in any personal injury.

The report gives equally interesting data concerning accidents to employees, and about the work of the safety committees. Of these latter, there are now 68, with a membership of 1,167. These committees meet monthly. Four safety agents spend most of their time visiting the shops and the terminals.

An appendix to this report gives annual totals of persons killed in motor vehicle accidents in every state of the Union.

The committee on "freight claim prevention," was organized seven years ago, and in 1919 such a committee was established on each division. These division committees meet every month. The report outlines, also, the work done in this direction by the American Railway Association.

The net amount of loss and damage bills paid on freight by the Baltimore & Ohio in 1923 was \$2,072,079 which was 0.99 per cent of the gross freight revenue. The reduction in total damage payments which has been accomplished in the last five years is indicated by the percentages of freight revenue, as follows:

1919.....	3.23 per cent
1920.....	2.08 per cent
1921.....	2.43 per cent
1922.....	1.16 per cent
1923.....	0.99 per cent



In the same time the payments for unlocated losses and damage have been reduced from \$1,568,284 to \$320,149; and these in 1923 were about 9 per cent of total losses as compared with 30 per cent of the total in 1919.

The local public relations committees have from the beginning recognized that one of their functions was to promote co-operation within the railroad organization. Each committee is made up of individuals from different departments and the committee meetings really become centers of discussion of general railroad efficiency; while all the time the primary purpose is to be ready at all times both to tell the public every bit of good news concerning the railroad and to explain away any unfavorable impressions which the public may have received. The committees, from the first, had an advantageous starting point in the declaration, made by President Daniel Willard some years ago, that the railroad company intends to be a "good neighbor" in all of the places where its activities are carried on.

Being a good neighbor is, of course, quite different from telling people that that is your character.

### Final Inspection of Train Control on C. & E. I.

The Interstate Commerce Commission has completed arrangements to begin on January 6 the final inspection and test of the Miller automatic train control installation on the Chicago & Eastern Illinois.

Additional railroads have filed petitions with the commission asking an extension of time in which to complete their installations of automatic train control, which, under the commission's order, were to be completed by December 31, 1924.

The New York, New Haven & Hartford has asked for an extension until January 1, 1926. After outlining its experiences in experimenting with different devices the petition says it was found necessary to make changes and that that part of the line from Cedar Hill to Berlin, Conn., 23.2 miles will be equipped by January 1.

The Pere Marquette has asked for an extension until February 6, 1926, saying it is expected that the installation can be completed by that time. It has been decided to adopt the intermittent induction type for installation between Seymour, Mich., and North Lansing, Mich. The petition says that unified operation and control of the Pere Marquette; the New York, Chicago & St. Louis; the Chesapeake & Ohio; the Hocking Valley, and the Erie is under consideration, and that conferences among the officers of these roads have developed that this type of train control, manufactured by the Union Switch & Signal Company and the General Railway Signal Company, will probably best meet the requirements and permit interchange of equipment. It is expected to let the contract to one of these companies for the first 20-mile section.

The petition of the Delaware & Hudson, noticed in the *Railway Age* last week, page 1141, though in terms a request for exemption, really asks for extension of time; for, as stated, the company proposes to proceed as rapidly as possible with the experimental installation which has been begun on the line from Rouse's Point, N. Y., southward. The length of this installation is 20 miles, not a whole division, as was stated in the news item. A chief reason given for asking for an extension of time, aside from the general undeveloped state of the art of automatic train control, is that, until the issuance of the order of July 18, 1924, the company had been trying to perfect a train control device (speed control), whereas that order, by permitting the use of a train stop subject to manual control, led to a change in the company's plans. The company further avers that until the automatic stop is further developed, the use of such a system, on its lines now equipped with automatic (visual) block signals, is likely to impair the efficiency of the block signals; is more likely to increase danger than to decrease it.

The Norfolk & Western has asked an extension of time, under the order, to March 1, 1925, saying it can have its installation completed by that time. The petition states that the company has endeavored diligently to comply with the order and has equipped the division with wayside signals and track circuits. On January 9, 1924, it contracted with the Union Switch & Signal Company for the required engine equipment and by January 1, 1925, it will have approximately 24 engines equipped, of the 41 on the division. The necessary equipment for the others is being shipped.

## Commission and Court News

### Interstate Commerce Commission

The commission has assigned the Southern class rate investigation for oral argument at Washington on January 14, 15 and 16.

The commission has made public a report by Examiner Disque recommending a finding by the commission that the interstate class and commodity rates in the Southwest and the all-rail and rail-and-ocean rates between the Southwest and points in other parts of the country east of the Rocky Mountains are unreasonable and unduly prejudicial, and that some of the intrastate rates are unduly preferential of the state traffic. A master scale of rates for the Southwest and Kansas and Missouri territory is recommended but the examiner says that orders should be withheld pending efforts to have the carriers and the various state commissions co-operate in putting the new rates into effect. The suggestion is made that the carriers submit new schedules of rates to apply between Kansas, southern Missouri and the Southwest and defined territory on the general basis of the suggested scale.

The commission has ordered all Class I carriers to make to the commission for the year 1924 and each subsequent year a preliminary report of capitalization and income; to be sent in not later than February 15.

### Court News

#### Excessive Damages

The Missouri Supreme Court holds that \$15,000 was excessive damages for the loss of the left arm by a switchman 45 years old, who was able to get about in three months and was earning wages as a night watchman at the end of the year; and should be reduced to \$12,000.—*Leighton v. Davis* (Mo.) 260 S. W. 986.

#### Failure to Stop Not Contributory Negligence

The Louisiana Supreme Court holds, two judges dissenting, that it was not contributory negligence of an automobilist, who had slowed down to three miles an hour, to cross without coming to a dead stop, where his car was struck by a train which started to back without a signal.—*Holstead v. Vicksburg, S. & P.* (La.) 98 So. 679.

#### Measure of Damages for Loss of Interstate Shipment

The Mississippi Supreme Court holds that under the Cummin's Amendment the measure of damages in a wholesale grocer's action for the loss of goods in interstate transportation was the market value at point of destination, and not the invoice price, plus freight.—*Yazoo & M. V. v. Delta Grocery & Cotton Co.* (Miss.) 98 So. 777.

#### Liability for Defective Cars

The Texas Court of Civil Appeals holds that a carrier is not relieved from liability for loss of wheat caused by a defect in a car by the shipper's undertaking to fix the car and failure to do so properly, where the shipper had to take the cars offered or wait an indefinite time for other cars.—*Ft. Worth & D. C. v. Hunt* (Tex. Civ. App.) 258 S. W. 593.

#### Evidence of Defective Coupler

The Federal Safety Appliance Act makes the duty to maintain couplers in such condition that they will always couple automatically by impact absolute, and the Mississippi Supreme Court holds that where plaintiff's testimony showed that because of the use of a nail instead of a cotter pin in the drawhead, a coupling could not always be made by the ordinary use of the lift lever, the nail catching on a part of the drawhead, there was sufficient evidence of a defective coupling appliance and a violation of the act, though it was not shown that the injured employee attempted to use the lift lever.—*Yazoo & M. V. v. Cockerham* (Miss.) 99 So. 14.

**Baggage Check Prima Facie****Evidence of Delivery to Carrier**

The Alabama Court of Appeals holds that though not conclusive on the carrier, the delivery of a check for baggage and its possession by the plaintiff passenger is prima facie evidence of delivery of the baggage to the carrier.—*L. & N. v. Childers* (Ala. App.) 98 So. 319.

**Backing Train Over Public Path****Without Signals Held Gross Negligence**

The Louisiana Supreme Court holds that backing a train without signals over a path used by the public, although not dedicated as a public crossing, was gross negligence, rendering the railroad liable for the death of a child struck by the train.—*Williams v. Missouri Pacific* (La.) 99 So. 286.

**Texas Statute Became Effective Automatically****After Federal Control Terminated**

The Texas Commission of Appeals holds that Texas Rev. St. 708, forbidding limitation of liability, suspended during federal control, became effective automatically on the termination thereof, and is not affected by section 208a of the Transportation Act.—*Lancaster v. Smith* (Tex.) 262 S. W. 74.

**Title to Width of Right of Way by Ten Years' Use**

The Mississippi Supreme Court holds that if a railroad, sued for damage to a tract of land by reason of operation of the railroad through it, has used the land for 10 years or longer before the suit, it has title to the width of the right of way used by it, and the court may decide the question of fact as to what width was actually used.—*Scott v. Mississippi Eastern* (Miss.) 99 So. 505.

**"Hearsay" Records of Trains Not Admissible**

The Alabama Court of Appeals holds that records of a Southern train dispatcher that the only train passing over the Southern's track at the time of an injury to a mule was owned by the defendant Mobile & Ohio, the records being made up from telegraphic reports, was hearsay and inadmissible against the M. & O.—*Mobile & Ohio v. Borden Coal Co.* (Ala.) 98 So. 315.

**Car Inspector Injured By Prank of Employee**

The Indiana Appellate Court holds that a car inspector, injured while performing his duty at a stone mill through the prank of an employee of the mill, who threw a stone on the car, which rolled off and struck the inspector, in which act the inspector had no part, was entitled to compensation under the Workmen's Compensation Act for an injury arising out of his employment.—*Chicago, I. & L. v. Clendennin* (Ind. App.) 143 N. E. 303.

**Special Spur Track Services Not****Within Line Haul and Lawful**

The Florida Supreme Court holds that payment by a shipper of an agreed compensation for special spur-track services cannot be recovered from the carrier on the ground that the charges were unlawful, such charges being for extra service not considered in making the freight rate for the line haul.—*Henderson v. Hines* (Fla.) 98 So. 333.

**Inference of Acquisition of Right of Way**

The Idaho Supreme Court holds that taking possession of a right of way and building and operating a transcontinental railroad over it support a legitimate inference of the acquisition of a valid right of way; and where a railroad has acquired and was using its right of way two years before the attempted dedication of a street, the rights of the public and of individuals arising out of that dedication as to the making of a crossing by making ex-

cavations, fills and embankments thereon, were held to be acquired subject to the railroad's right of way.—*O. S. L. v. City of Caldwell* (Idaho) 226 Pac. 175.

**Backing Train Over Crossing at Night****Without a Light Not Negligence Per Se**

The Indiana Appellate Court holds that, while ordinary care in the operation of a train backwards over a street crossing at night may, under some circumstances, require a light at the rear of the train, doing so is not negligence per se, in the absence of a statute or ordinance requiring such a light.—*Chicago, I. & L. v. Sanders* (Ind. App.) 143 N. E. 175.

**Wrongfully Discharged Employee Must Minimize****Damage by Trying to Obtain Other Employment**

The Mississippi Supreme Court holds that a servant engaged for a specified time and wrongfully discharged must make reasonable exertion to prevent loss by obtaining other employment, and if he enhances his damages by wilfully or negligently remaining out of employment the increased loss must fall on him.—*Batesville-Southwestern v. Vick* (Miss.) 90 So. 7.

**Railroad Not Liable for Unexplained Explosion**

The Mississippi Supreme Court holds that where a passenger was injured by an unexplained explosion in the car, and no marks were left about the car, which had been inspected and cleaned that morning, the evidence excluded any facts or circumstances tending to place responsibility on the railroad, completely rebutting the presumption of negligence, and entitling the company to a directed verdict.—*Gulf & S. I.* (Miss.) 98 So. 60.

**State Commission May Make Joint Rates Between****Lumber Company Railroad and Standard Railroad**

The North Carolina Supreme Court holds that the state has authority to declare a lumber company a common carrier, and where this has been done by the state corporation commission, the commission may make joint rates between it and a standard railroad company to all stations over the latter's road.—*Corporation Commission v. A. C. L.* (N. Car.) 121 S. E. 767.

**Delivery to Carrier on Tracks of Local Road**

The Texas Commission of Appeals holds that cotton placed on a compress platform, for which bills of lading are issued, is presumed to be for immediate shipment, notwithstanding the carrier issuing the bills had no tracks at the point of origin. It is also held that permitting baled cotton to remain five days on the loading platform was negligence, making the carrier liable for loss by fire from sparks from another railroad's engine.—*Texarkana & Ft. S. v. Brass* (Tex.) 260 S. W. 828.

**Bill of Lading as Proof of Delivery; Texas Statute**

The Texas Commission of Appeals holds that Texas Rev. St. Art. 713, does not make a bill of lading conclusive proof of delivery of goods to the carrier as it only applies "where common carriers receive goods for transportation," so that the receipt in a bill of lading has only a prima facie effect; which, however, makes the signing of the bill the commencement of the trip so long as delivery is not rebutted.—*Texarkana & F. S. v. Brass* (Tex.) 262 S. W. 737.

**Duty to Keep Waiting Rooms in Safe Condition**

The Kentucky Court of Appeals holds that a railroad's duty to keep its waiting room in a reasonably safe condition is not limited to the 30 minutes preceding the time of departure of trains during which the Kentucky statute requires the waiting room to be kept open and the company would be liable to a prospective passenger entering an open waiting room two hours before train time, who was injured by a hole in the floor, unless she was guilty of contributory negligence.—*L. & N. v. Minnix* (Ky.) S. W. 15.



### Switchman Assumes Risk of Emergency Stop

An engineer, on an engine pushing six flat cars, on a signal from the conductor when a cow tried to cross in front of the train, without signal stopped the train with the emergency brakes, throwing a switchman on the front of the first car over the end of the car. The Mississippi Supreme Court holds the engineer was not negligent in the absence of evidence that he knew the switchman was in danger. The occurrence was an assumed hazard of the switchman's occupation.—*Austin v. M. & O. (Miss.)* 99 So. 3.

### Agreement Requiring Shipper to

#### Inspect Cars Held Invalid

The Louisiana Supreme Court holds that a clause in a bill of lading requiring the shipper to inspect the carrier's own cars and assume the risk of defects therein is invalid because (1) it requires the shipper to assume a risk arising from the carrier's own negligence in failing to inspect (2) shifts the burden of proof to the shipper and (3) requires an unskilled person to make an inspection which only an expert can make.—*Coustaline v. L. R. & N. (La.)* 98 So. 81.

### Drayman Using Unauthorized Appliance

#### Cannot Recover for Injury

The Louisiana Supreme Court holds that a drayman, at a station to remove goods from a freight car, who, without authority, undertook to pass into the freight office over the iron plate bridging the space between the platform and the car, and was injured when the plate slipped from the car sill, was neither an invitee nor a licensee, and could not recover from the railroad, which owed him no other duty than to refrain from wantonly injuring him.—*Taylor v. Vicksburg, S. & P. (La.)* 98 So. 90.

### Discontinuance of Train Stops Sustained

The West Virginia Supreme Court of Appeals holds that the state may, by legislative enactment or through the instrumentality of its public service commission, require a railroad company to stop its interstate trains at a particular station when adequate local facilities so require; following *C. B. & Q. v. Commission*, 237 U. S. 220; *St. Louis & S. F., v. Commission*, 254 U. S. 535. But the court refused to suspend an order of the commission authorizing the discontinuance of two trains running between Norfolk, Virginia, and Columbus, Ohio, at Glenhayes, it not being shown that that station is not adequately served by local trains.—*Mackubin v. Commission (W. Va.)* 121 S. E. 731.

### Highest-Degree-of-Care-for-Passengers Rule

#### Held Too Stringent by Texas Court

The Texas Supreme Court holds that an instruction that "a carrier of passengers is required to exercise the greatest degree of care which can be exercised under all the circumstances short of warranty of its passengers" was erroneous, in that it imposed a greater duty than is required by law and was calculated to mislead the jury. The court limits the degree of care required to such a high degree of prudence as would be used by very cautious, prudent, and competent persons under similar circumstances.—*Gulf, C. & S. F. v. Conley (Tex.)* 260 S. W. 561, reversing 236 S. W. 521.

### Contract Indemnifying Railroad Against

#### Liability for Injury to Cattle

The Alabama Court of Appeals holds that a contract between a railroad and an adjoining owner (to whom it furnished fencing material) indemnifying the railroad against liability for injury to the owner's cattle through negligence or otherwise was void as against public policy.—*Central of Georgia v. Hammond (Ala. App.)* 99 So. 73.

In Alabama, contrary to the common law rule followed in other states, in the absence of statutes to the contrary, that the owner of animals is bound, at his peril, to keep them on his own premises, the rule is that "in the absence of fence law, the owner may permit his animals to run at large, so that their presence on a railroad track affords no ground of contributory negligence," and the Alabama Supreme Court holds that the contract above mentioned

contravened the policy of the state statute (Code §§5473, 5476) requiring the engineer to endeavor to stop his train on perceiving any obstruction on the track, including, it has been held, domestic animals.—*Ex parte Central of Georgia (Ala.)* 99 So. 74.

### Employers' Liability

The Kentucky Court of Appeals holds that neither a machinist in defendant's roundhouse, injured while engaged in setting valves on engines nor the railroad was engaged in either interstate or intrastate commerce, so that the state Employers' Liability Act, which only applies when railroad and injured person are "engaged in commerce," was not applicable.—*Idol v. L. & N. (Ky.)* 261 S. W. 878.

The Louisiana Supreme Court holds that a bridge foreman, struck by a pile while assisting in unloading piling from a car, the piling being an intrastate shipment in a train handling only intrastate commerce, was not within the federal act.—*Dupuis v. L. R. & N. Co. (La.)* 99 So. 709.

### Sale of Shipment to Satisfy Lien

#### for Demurrage, etc., Not Conversion

A car of lumber having been refused by the company designated by the consignee to unload it and two days demurrage having accumulated, the Oklahoma Supreme Court holds that the railroad could not remit or rebate this in favor of the consignee, an offer by the latter to pay the freight if the railroad would rebate the amount of demurrage and war tax lawfully due together with those in dispute was not made in good faith and did not discharge the carrier's lien. Therefore a subsequent sale of the lumber to satisfy the lien for freight, demurrage, taxes, storage, etc., was not a conversion by the carrier.—*Atchison, T. & S. F. v. Tulsa Rig; Reel & Mfg. Co. (Okla.)* 225 Pac. 696.

### Decisions Under Federal Employees' Liability Act

The Pennsylvania Supreme Court holds that a freight conductor of an interstate train injured in its operation before reaching destination was within the act although ten interstate cars had been switched out and intrastate empty cars attached for distribution.—*McDonald v. P. & L. E. (Pa.)* 123 Atl. 591.

The Minnesota Supreme Court holds that a night watchman in a yard protecting freight, nearly all of which was interstate, injured while attempting to board an interstate train, was within the act.—*Fitzgerald v. G. N. (Minn.)* 196 N. W. 657.

The Missouri Supreme Court holds that a switch engine fireman killed in a collision with standing cars, was not within the act where it was not shown that any cars then being handled by his engine were interstate cars.—*Martin v. St. L.-S. F. (Mo.)* 258 S. W. 1023.

The North Carolina Supreme Court holds that a yard brakeman injured while switching cars from lead tracks upon intrastate switch tracks branching therefrom, to be carried to intrastate places, was not engaged in interstate commerce.—*Barbee v. Davis (N. Car.)* 121 S. E. 176.

### Reparation for Excessive Rates Disallowed

#### Where Result Would Be Discriminatory

The Utah Supreme Court holds that, while tariffs must be construed according to their plain language, any particular phrase or sentence in a tariff sheet must always be considered in connection with the subject-matter and the circumstances to which the language refers, and with any footnotes or other cognate matters.

Abstract rules of construction of the Interstate Commerce Commission in its proceedings are not binding on a Public Service Commission in deciding whether freight rates or other charges are discriminatory.

Under the Utah statute the state Supreme Court cannot review errors of judgment of the Public Utilities Commission in fixing rates.

Under that statute (Comp. Laws, 1917, §4838) the commission can order reparation only where no discrimination will result; and where coal dealers have sold coal shipped in accordance with excessive tariff rates paid by them, to allow them to recover back a certain amount of the freight would be discriminatory.—*Jeremy Fuel & Grain Co. v. Public Utilities Commission (Utah)* 226 Pac. 456.

## Labor News

### Labor Board Decisions

#### Emergency Calls of Signal Maintainers

In a decision on the question of whether maintainers of automatic signals, who are regularly assigned to work six days a week and who are required to hold themselves subject to emergency calls on Sundays and holidays, are entitled to time and one-half for such Sundays and holidays, the Railroad Labor Board has decided against the employees. The dispute involved the Southern Pacific and its signal men, represented by the Brotherhood of Railroad Signalmen of America. The board holds that the Southern Pacific is not violating the spirit of existing rules in requiring certain signalmen to advise their superior officers where they can be located on Sundays and holidays for protection against emergencies that may arise. "The characteristics of the service in the signal department make it imperative that men be available for call at all times. This established principle is recognized in connection with the daily assignment, the employees being assigned to eight hours' actual service and subject to call during the 16 hour period while not actually on duty. If the employees' request were to be granted it would be equally consistent to allow payment for 16 hours each week day in addition to the hours of regular assignment. The board does not feel that the Southern Pacific should take undue advantage of the employees by refusing them permission to absent themselves from their respective territories when so requested."—Decision No. 2769.

#### Alton Double Heading Rule

The Railroad Labor Board has ordered that the existing double heading rule in effect on the Chicago & Alton be modified so as to remove the tonnage restriction now in effect. This restriction has been especially burdensome on the Western division of the Alton which handles an extremely heavy business on a single track line. The old rule contained a provision that "in case of necessity two eight-wheel engines with cylinders not exceeding 18 in. x 24 in. may be used double headed, but the maximum tonnage of the two engines shall not exceed the tonnage rating of Class G-3 engines on each division or territory." Under the Labor Board decision the following will be incorporated in the rule. "Existing schedule provisions limiting double heading of trains and the use of helpers or pushers will be modified to provide that with trains of over 40 cars exclusive of cabooses double heading is prohibited except as hereinafter stated: Double headers may be run on any district provided the rating of the largest engine handling the train is not exceeded. In case of an accident to an engine consolidation may be effected with another train and the consolidated train brought into a terminal as a double header if practicable. It is recognized that the exigencies of the business may require helper service additional to that provided for, in which event the matter shall be settled by negotiation between the managements and committees, and provisions for pusher or helper service may be made by managements and committees for pusher or helper engines on any district to maintain the tonnage intact over grades. East or northbound trains consisting of five or more cars of meat, stock, perishable freight or merchandise, may be double headed between Kansas City, Mo., and Roodhouse, Ill., and shall be exempt from tonnage restrictions. Locomotives used in such double head movements may, in order to equalize power, be double headed west or southbound to terminal of origin without tonnage restrictions." The request of the railroad for changes in the punitive overtime rule and the short turnaround rule in passenger service was denied by the Labor Board. Certain existing inequalities in the turnaround rule were recognized by the board, however, which directed that a conference be held by the representatives of the management and of the train and engine service brotherhoods for the purpose of eliminating the inconsistencies.—Decision No. 2728.

THE BALTIMORE & OHIO has adopted 3,800 suggestions out of 5,272 submitted by its shopmen during the last eight months.

## Equipment and Supplies

### Locomotives

THE AKRON, CANTON & YOUNGSTOWN is inquiring for 2, 0-8-0 switching locomotives.

THE OREGON AMERICAN LUMBER COMPANY has ordered one Prairie type locomotive from the Baldwin Locomotive Works.

THE READING COMPANY has ordered 25 Consolidation type and five Pacific type locomotives from the Baldwin Locomotive Works.

THE INSULAR LUMBER COMPANY, Philippine Islands, has ordered one, 0-6-6-0 Mallet type locomotive from the Baldwin Locomotive Works.

THE CENTRAL OF NEW JERSEY has ordered 10 Mikado type locomotives from the Baldwin Locomotive Works. This is in addition to the 10 Mikado type locomotives recently ordered, as was reported in the *Railway Age* of December 20.

### Freight Cars

THE PHILLIPS PETROLEUM COMPANY is inquiring for 75 tank cars.

THE BALTIMORE & OHIO is reported to be inquiring for 200 steel underframes.

THE CHICAGO, INDIANAPOLIS & LOUISVILLE is inquiring for 500 box cars of 40 tons' capacity.

THE NORTHERN PACIFIC is inquiring for 500 box car underframes and 10 caboose car underframes.

THE WABASH, reported in the *Railway Age* of November 29 as inquiring for 400 gondola car bodies has ordered this equipment from the Streater Car Company.

THE NEW YORK CENTRAL has placed an order with the Illinois Car & Manufacturing Company for the conversion of 200 box cars into stock cars and 200 box cars into flat cars.

THE LOUISVILLE & NASHVILLE has ordered 1,000 gondola cars from the Pressed Steel Car Company. This is in addition to the 1,000 gondola cars recently ordered from the same builder, as was reported in the *Railway Age* of December 20.

THE CHICAGO, BURLINGTON & QUINCY, reported in the *Railway Age* of December 6 as expecting to enter the market soon for 500 gondola cars is now inquiring for 500 gondola cars of 50 tons' capacity. The company is also inquiring for 1,000 50-ton automobile cars and 1,000 40-ton automobile cars.

### Passenger Cars

THE NORTHERN PACIFIC is inquiring for 14 passenger refrigerator car underframes.

THE LOUISVILLE & NASHVILLE, reported in the *Railway Age* of December 13 as inquiring for 4 coaches, 4 partition coaches, 4 baggage cars, 8 baggage and mail cars and 2 dining car shells, has ordered the 4 coaches and 8 baggage and mail cars from the Pressed Steel Car Company and the 4 partition coaches, 4 baggage cars and 2 dining car shells from the American Car & Foundry Co.

### Iron and Steel

THE DETROIT, TOLEDO & IRONTON has ordered 3,000 tons of steel rails from manufacturers in Belgium.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 1,500 tons of structural steel for 1925 bridge work.



THE YOSEMITE VALLEY has ordered 3,600 tons of structural steel for bridges, from the American Bridge Company.

THE PERE MARQUETTE has divided an order of 10,000 tons of rail between the Illinois Steel Company, the Inland Steel Company and the Bethlehem Steel Corporation.

THE MINNEAPOLIS, ST. PAUL & SAULT STE MARIE has ordered 6,500 tons of rail from the Illinois Steel Company, 3,000 tons from the Bethlehem Steel Corporation and 1,400 tons from the Inland Steel Company.

### Roads Expect to Buy Rail in Near Future

The following roads are expected to buy rail in the near future: The Chicago, Burlington & Quincy and the Chicago & North Western, 40,000 tons; Chicago, Rock Island & Pacific, 40,000 tons; New York, Chicago & St. Louis, 20,000 tons, and St. Louis Southwestern, 11,000 tons.

## Machinery and Tools

THE ILLINOIS CENTRAL has placed an order for a journal and axle turning lathe.

THE ELGIN, JULIET & EASTERN has ordered one 25-ton locomotive crane from the Industrial Works.

## Track Specialties

THE SOUTHERN PACIFIC is inquiring for 22,000 kegs of spikes.

THE INTERNATIONAL-GREAT NORTHERN is in the market for a quantity of spikes, bolts and tie plates.

## Miscellaneous

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, January 5, 1925, for steel wheels for the requirements of the New York Central Lines.

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, December 29 for its requirements until April 1, 1925, for its lines east and west of Buffalo, of fuel oil, gasoline, kerosene, long-time burning semaphore oil, turpentine substitute, coach candles, mineral seal oil, common black oil, West Virginia black oil, gas oil and lubricating oil. Bids are also wanted for bunker C fuel oil for its marine equipment, for the period of January 1, 1925, to January 1, 1926.

## Signaling

THE KANSAS CITY TERMINAL is installing a 15-lever Union Model 14 electro-pneumatic interlocking machine at Tower No. 3, Santa Fe Crossing, Kansas City, Mo.

THE WABASH has ordered from the Union Switch & Signal Company a complete new Saxby & Farmer mechanical interlocking machine, 18 working levers, for installation at Franklin, Ohio.

THE ATLANTIC COAST LINE has ordered from the Union Switch & Signal Company 99 one-arm and 2 two-arm Style "S" semaphore signals for installation on the main line between South Charleston, S. C., and Yemassee, S. C.

THE BOSTON ELEVATED has ordered from the Union Switch & Signal Company materials for the installation of an electro-pneumatic interlocking plant at Tower "F," Dudley street, Boston; including 20 color light signals and 14 switches; and a track model having 47 lights.

THE MILWAUKEE (WIS.) TRAFFIC CLUB will hold its annual dinner at the Hotel Pfister, Milwaukee, on Wednesday evening, January 14. Among the speakers scheduled are Charles Donnelly, president of the Northern Pacific. H. W. Ploss is chairman of the entertainment committee.

## Supply Trade News

The Link-Belt Company, Chicago, has moved its St. Louis office to 3638 Olive street.

Martin H. Schmid, metallurgical engineer of the United Alloy Steel Corporation, has been appointed assistant general manager of sales of the alloy division, with headquarters at Canton, Ohio.

### General Electric Company

Francis C. Pratt, vice-president in charge of engineering of the General Electric Company, has been appointed to fill the vacancy caused by the resignation of G. E. Emmons, as vice-president in charge of manufacturing and chairman of the manufacturing committee. Mr. Pratt's new title will be vice-president in charge of engineering and manufacturing. H. F. T. Erben has been appointed assistant vice-president on the staff of Mr. Pratt. He will continue as vice-chairman of the manufacturing committee. Mr. Pratt's engineering assistant is E. W. Allen, appointed to the position of manager of the engineering department in April, 1924.



F. C. Pratt

Francis C. Pratt was born in Hartford, Conn., on January 19, 1867. He was graduated with the degree of Ph.D. from Sheffield School of Yale University in 1888. In 1890, he entered the plant of the Pratt & Whitney Company at Hartford, of which concern his father was president. He advanced to the vice-presidency and, in 1906, left that company to become associated with the General Electric Company as assistant to E. W. Rice, Jr. In 1912 he was appointed assistant to the president and, in 1919, was promoted to the vice-presidency in charge of engineering.



E. W. Allen

H. F. T. Erben, the new assistant vice-president was born in New York City in 1866 and, after graduation from Stevens Institute, entered the employ of the Edison Company. He has been identified with the General Electric Company since its early days in Schenectady. In October, 1887, he entered the employ of the Edison Machine Works. With the growth of the company and the later development at Schenectady, he became designing engineer of the direct current department shortly after the formation of the General Electric Company in 1892. During 1914, Mr. Erben was made engineer of the Schenectady works, and, in March, 1916, he was appointed assistant manager. Following Mr. Emmons' retirement as works manager in 1920, he assumed full charge of the works

as manager, a position which he held until January 1, 1923, when C. E. Eveleth was made works manager.

E. W. Allen, manager of the engineering department, was born in Buchanan, Va., in 1880 and was graduated from the Virginia Polytechnic Institute in 1900 with a B.S. degree in electrical engineering. He first entered the employ of the General Electric Company in January, 1901, in the test department in Schenectady. On December 1, 1902, he was assigned to the lighting engineering department where he remained until September 30, 1911, when he was appointed engineer of the Chicago district. In September, 1913, he was made assistant district manager in addition to his duties as district engineer. Early in 1917 he entered the military service and served two years. He returned to the company in April, 1919, and received his appointment as manager of the engineering department in April, 1924.

T. R. Langan has been appointed manager, transportation division in the New York office of the **Westinghouse Electric & Manufacturing Company** to succeed A. J. Manson recently promoted to manager, heavy traction division of the railway sales department at East Pittsburgh, Pa. Mr. Langan was formerly manager of the transportation section in the Buffalo, N. Y., district. After taking courses at Pratt Institute, Brooklyn, N. Y., and while taking night courses at Carnegie Institute of Technology, Pittsburgh, Mr. Langan entered the employ of the Westinghouse Company in 1904 as an armature wind-uper's helper and wireman's helper in the service department. From 1904 to 1906 he worked on the earlier installation of multiple unit control equipments on the Brooklyn Elevated and New York subway. In 1906 he began the special apprenticeship course at the East Pittsburgh works. After taking up construction work in the service department in 1908, Mr. Langan was made assistant general foreman of maintenance on the electric division of the New York, New Haven & Hartford, with headquarters at Stamford, Conn. In 1910 he returned to East Pittsburgh on special service and engineering work in connection with the development of the present line of Westinghouse HL control and railway apparatus. In 1913 Mr. Langan entered the sales department. At Baltimore, Md., he subsequently went to Philadelphia, Pa., then to Buffalo, N. Y., later to Syracuse and finally to his present position in New York City.



T. R. Langan

The Dallas office of the **Franklin Railway Supply Company** under the supervision of S. D. Rosenfelt, district manager,

will be moved on January 1 to the Boatmen's Bank building, 314 North Broadway, St. Louis, Mo.

The **Mid-West Engineering Company**, Chicago, has moved its sales office to the Steger building, 28 East Jackson boulevard.

**Johns-Manville, Inc.**, will establish a plant in New Orleans, La., the first unit of which will be equipped and in operation by April.

The **Joyce-Cridland Company**, Dayton, Ohio, has opened an office in the Railway Exchange building, St. Louis, Mo., in charge of R. C. O'Brien.

**Irwin V. Amerman** has opened an office for the sale of iron and steel railroad supplies, also new and relaying rails, at 408 Frisco building, St. Louis, Mo.

**B. B. Phillips** resigned as general manager of the **Gifford-Wood Company**, Hudson, N. Y., and severed his connections with that organization on December 15.

**W. S. Campbell** has been appointed manager of domestic machinery sales in the eastern district for **Joseph T. Ryerson & Company, Inc.**, with headquarters at Jersey City, N. J.

**Albert E. Hay** has been elected president and general manager of the **Fairbank Steam Shovel Company**, Marion, Ohio, to succeed J. G. Fairbank, president and treasurer, who has been elected a director. **Robert Carroll** has been elected vice-president and J. G. Davidson has been elected secretary and treasurer.

The **American Car & Foundry Company** has sold to a Canadian syndicate its stockholdings in the **Canadian Car & Foundry Company**. It is understood that two or three Canadian men will replace the American Car & Foundry representatives who were elected to the directorate at the time of the stock purchase in 1920.

**A. M. Castle & Company**, Chicago, has purchased the firm of **Little & Robertson, Inc.**, Los Angeles, Calif., an independent distributor of finished steel and iron products. The A. M. Castle & Company plans to make improvements to the Los Angeles plant to cost approximately \$500,000. This company is also contemplating the purchase of 10 acres of land in San Francisco, Calif., on which it will construct a plant estimated to cost \$500,000. **Louis M. Henoch**, treasurer of A. M. Castle & Company, will assume direct supervision of the Pacific coast plant.

**A. A. Corey, Jr.**, president of the **Vanadium Corporation of America**, New York, announces that an arrangement has been made with the **United States Ferro Alloys Corporation** for the merging of that concern with the Vanadium company. The plan involves the acquisition of complete control of the operations and affairs of the Alloys company immediately, but the corporate organization will be maintained. Mr. Corey, president, and L. K. Diffenderfer, treasurer of the Vanadium Corporation have been elected also president and treasurer respectively of the United States Ferro Alloys Corporation.

#### FREIGHT CARS ORDERED, INSTALLED AND RETIRED

Month 1924	Domestic orders reported during month	Installed during month	Aggregate capacity tons	Retired during month	Aggregate capacity tons	Owned at end of month	Aggregate capacity tons	An order as of first of following month	Building in R. R. shops
January .....	6,020	15,589	707,367	12,329	516,695	2,310,032	100,644,107	21,696	2417
February .....	18,365	11,386	554,481	10,466	411,228	2,310,570	100,767,731	40,030	2715
March .....	35,846	9,962	446,043	8,726	352,431	2,311,405	101,165,332	62,340	2697
April .....	11,189	8,718	369,978	8,026	306,288	2,312,074	101,223,891	62,289	2739
May .....	435	9,159	439,516	9,059	360,212	2,312,237	101,303,200	57,266	2467
June .....	387	10,909	538,118	8,347	321,094	2,314,798	101,569,593	57,733	2269
July .....	533	16,583	1,151,302	8,413	316,527	2,322,968	102,388,652	51,156	4602
August .....	4,751	15,452	785,288	8,834	333,173	2,329,582	102,845,000	40,961	3618
September .....	22,520	15,455	779,078	9,337	370,607	2,336,147	103,270,000	47,553	3045
October .....	11,853	16,598	834,762	10,504	218,806	2,342,149	103,688,000	6,252	2506
November .....	13,038								
Total for 10 months.....	129,451								
Total for 11 months.....	124,937								

(1) Details as to orders from *Railway Age* Weekly reports. Figures include all domestic orders placed with builders and railroad shops but not rebuilt equipment.

(2) Figures as to installations and retirements prepared by Car Service Division A. R. A. Figures cover only those roads reporting to the Car Service Division. They include equipment received from builders and railroad shops. Figures of installations and retirements alike include also equipment rebuilt to an extent sufficiently so that under the accounting rules it must be retired and entered in the equipment statement as new equipment. The figure as to orders as given in the first column of table is not strictly comparable with figures relating to installations given in succeeding columns.



## Railway Construction

**ATCHISON, TOPEKA & SANTA FE.**—This company is reported to be contemplating the construction of a roundhouse and machine shop at Gainesville, Tex.

**ATCHISON, TOPEKA & SANTA FE.**—This company contemplates the construction of an engine terminal, including an enginehouse and shop buildings, at Emporia, Kans. The work has not yet been authorized and the date for the construction has not yet been set.

**BOSTON & MAINE.**—This company has awarded a contract to the Rowe Construction Company, Woodville, N. H., for the construction of an ice house at Newport, Vt., to cost approximately \$29,000.

**CENTRAL OF GEORGIA.**—This company has awarded a contract to the Ogle Construction Company, Chicago, for the erection of a reinforced-concrete coaling station at Millen, Ga., to cost approximately \$45,000.

**CHICAGO, MILWAUKEE & ST. PAUL.**—This company has begun the installation of a 436-ft. steel swing span to replace the pontoon bridge and pile trestle on the east end of the Missouri river bridge at Chamberlain, S. D. The project will cost approximately \$95,000. The steel span is one that was purchased some time ago so that the company is not in the market for structural steel in connection with the work.

**CLINCHFIELD.**—This company is reported contemplating the construction of a passenger station at Erwin, Tenn.

**COLORADO & SOUTHERN.**—This company contemplates the construction of a roundhouse at Fort Collins, Colo.

**LOS ANGELES JUNCTION.**—This company has applied to the Interstate Commerce Commission for authority to construct eight miles of line through the city of Vernon, Cal., to connect with the Southern Pacific and the Union Pacific.

**MISSISSIPPIAN.**—This twenty-five mile road, which connects with the St. Louis-San Francisco at Amory, Miss., which has been under construction for the past year and which has been for some time in operation for freight traffic as far as Smithville, is now nearly completed, and it is expected that trains will run through to Fulton, Miss., the northern terminus, before the first of January. This road has been built by John T. Cochrane, of Mobile, Ala., who is president of the Alabama, Tennessee & Northern and the Alabama & North Western. The new road has been constructed under the supervision of John T. Cochrane, Jr., and he is now vice-president and general manager, with headquarters at Amory. The route of this road, from Amory northward to Fulton, lies along the fertile valley of the Tombigbee River. The line penetrates large tracts of yellow pine timber, of the best quality, and twenty or more mills using forest products have been in operation for some time, preparing to use the railway as soon as it is ready. Fulton is the county seat of Itawamba county and has two banks, though it has never before had a railroad.

**NASHVILLE, CHATTANOOGA & ST. LOUIS.**—This company contemplates the construction, with company forces, of a roundhouse at Hollow Rock Junction, Tenn., to replace the building recently destroyed by fire with a loss of \$20,000.

**PENNSYLVANIA.**—This company has awarded a contract to the Eckstein-Kuglem Company, Wheeling, W. Va., for the construction of a brick passenger station, 25 ft. by 75 ft., at Follansbee, W. Va., to cost \$40,000. This building is now under construction. The Pennsylvania has also awarded a contract to the Dresser-Minton-Scobell Company, Cleveland, Ohio, for the construction of a passenger station, 30 ft. by 130 ft., at Weirton, W. Va., to cost \$40,000.

**WABASH.**—This company is reported to have plans for the construction of locomotive and car repair shops and a large classification yard at Peru, Ind.

## Railway Financial News

**ATCHISON, TOPEKA & SANTA FE.—Bonds of Subsidiaries.**—The Gulf, Colorado & Santa Fe and 18 other subsidiaries of the Santa Fe system have filed with the Interstate Commerce Commission applications for authority to issue mortgage bonds to the amount of \$42,000,000 to be delivered to the Santa Fe at par in satisfaction of indebtedness for advances for construction and improvements.

**BIRMINGHAM & SOUTHEASTERN.—Readjustment of Bonds.**—George C. Van Tuyl, Jr., chairman of the bondholders' committee, has notified holders of the first mortgage 6 per cent bonds that it has prepared and adopted a plan and agreement of readjustment of this issue.

**BOSTON & MAINE.—Reorganization Proposed.**—See article on another page of this issue.

**CHESAPEAKE & OHIO.—Lease.**—The Interstate Commerce Commission has authorized this company to acquire control by lease of the Ashland Coal & Iron, the Long Fork and the Millers Creek.

**CHICAGO, ROCK ISLAND & PACIFIC.—Bonds.**—This company has been authorized by the Interstate Commerce Commission to sell \$1,000,000 of first and refunding mortgage bonds at not less than 84½, the proceeds to be applied to reducing a government loan.

**DENVER & RIO GRANDE WESTERN.—Bonds Ready.**—Announcement has been made by Kuhn, Loeb & Co. and the Equitable Trust Company, reorganization managers, that the new general mortgage sinking fund gold bonds of the new corporation formed under the reorganization, and fractional scrip for such bonds and the certificates for the preferred stock are ready for distribution. The bonds and stock certificates are in temporary form, exchangeable for definitive bonds and certificates when prepared, and the bonds are in bearer form without coupons. Holders of certificates of deposit to obtain the new securities to which they are entitled, the bankers state, must surrender their certificates of deposit to the respective depositaries which issued the same.

**DETROIT, BAY CITY & WESTERN.—Sale Postponed.**—The sale of this road has been postponed until January 17.

**GREAT NORTHERN.—Equipment Trust.**—This company has applied to the Interstate Commerce Commission for authority for an issue of \$4,250,000 of 4½ per cent equipment trust certificates to be sold at not less than 96.

**GULF, MOBILE & NORTHERN.—Dividend Increased.**—The directors have declared a quarterly dividend of 1½ per cent on the preferred stock, payable February 15 to holders of record February 1. In the last three quarters disbursements of 1¼ per cent were made.

**NEVADA NORTHERN.—Valuation.**—The Interstate Commerce Commission has issued a report finding the final value for rate-making purposes of the property owned and used for common carrier purposes as of June 30, 1917, to be \$3,404,900.

**NEW YORK, ONTARIO & WESTERN.—Dividend.**—A dividend of 1 per cent has been declared on the common stock, payable January 28 to stock of record January 8. The last previous dividend was 2 per cent in 1921.

**PITTSBURGH, CINCINNATI, CHICAGO & ST. LOUIS.—New Director.**—J. H. Frantz, vice-president of the Middleton Rolling Mill Company of Columbus, Ohio, has been elected a director succeeding William H. Lee, of St. Louis, who has resigned.

**ROANOKE.—Abandonment.**—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of the line from Horners to Brunswick, Va., 8.5 miles.

**SEABOARD AIR LINE.—Bonds.**—This company has been authorized by the Interstate Commerce Commission to issue not exceeding \$1,023,255 of refunding mortgage bonds, to be pledged under the first and consolidated mortgage, to procure the authentication and delivery of \$1,082,000 first and consolidated mortgage bonds, and

to pledge and repledge from time to time \$1,082,000 of such bonds and \$446,500 now in the treasury as collateral for short term notes.

**SEABOARD AIR LINE.—Equipment Trust.**—This company has applied to the Interstate Commerce Commission for authority for an issue of \$3,390,000 of 5 per cent equipment trust certificates to be sold at 98.25 to Freeman & Co.

**Interest.**—The Seaboard Air Line has ordered payment of the regular 2½ per cent semi-annual interest on \$25,000,000 adjustment 5 per cent income bonds, due February 1 on coupons 49 and 50.

**ST. JOHNSBURY & LAKE CHAMPLAIN.—New Board.**—See article on another page entitled "Boston & Maine Reorganization Proposed."

**TEXAS & PACIFIC.—Preferred Dividend.**—The directors have declared an initial dividend on the preferred stock of \$2.91 a share to cover the period from May 26, 1924, the date of issue, to Dec. 31, 1924. This places the shares on a per annum basis of 5 per cent. There is outstanding \$24,676,000 preferred, of which the Missouri Pacific owns \$23,703,000.

### Dividends Declared

**Albany & Susquehanna.**—4½ per cent, semi-annually, payable January 2 to holders of record December 15; special, 2 per cent, payable January 10 to holders of record December 22.

**Baltimore & Ohio.**—Common, 1¼ per cent, quarterly; preferred, 1 per cent, quarterly; both payable March 2 to holders of record January 10.

**Gulf, Mobile & Northern.**—Cumulative preferred, \$1.50, payable February 15 to holders of record February 1.

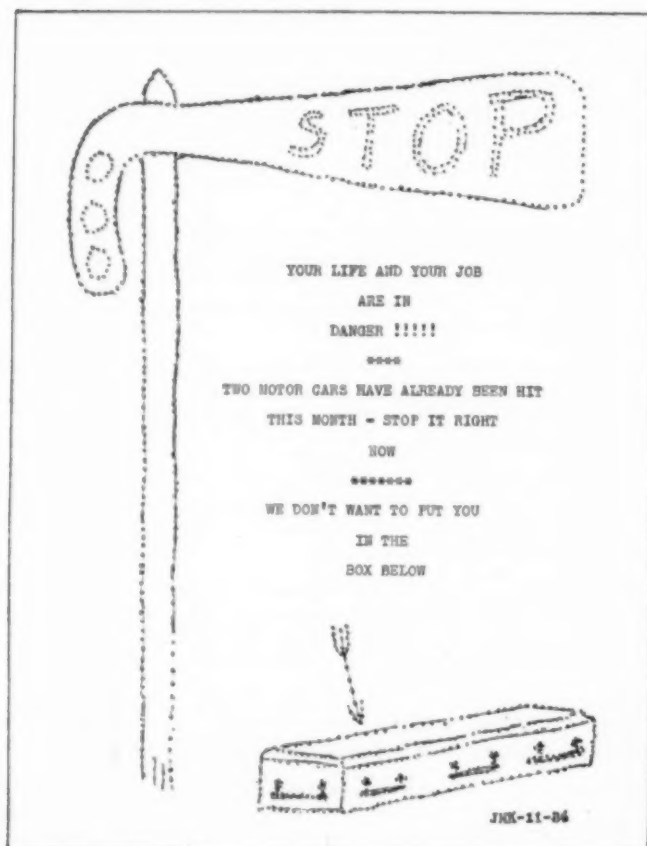
**Louisville, Henderson & St. Louis.**—Preferred, 4 per cent, annually, payable February 16 to holders of records February 2.

**Northern Pacific.**—\$1.25, quarterly, payable February 2 to holders of record December 31.

**Texas & Pacific.**—Preferred, 5 per cent, annually, payable December 31 to holders of record May 26, 1924.

### Trend of Railway Stock and Bond Prices

	Dec. 23	Last Week	Last Year
Average price of 20 representative railway stocks .....	80.33	80.47	59.55
Average price of 20 representative railway bonds .....	89.06	89.06	82.13



A Suggestion for Foremen—and Others

## Railway Officers

### Financial, Legal and Accounting

**F. A. Winkler** has been appointed auditor of the Chicago Union Station Company succeeding F. J. Owens, resigned, on account of ill health.

### Operating

**J. H. Jeroth** has been appointed acting assistant trainmaster of the Logansport division of the Pennsylvania.

**D. H. Dailey** has been appointed assistant to the general manager of the Chicago & Illinois Midland, with headquarters at Taylorville, Ill., a newly created position.

**J. J. Brinkworth** has been appointed assistant superintendent of the River division of the New York Central, with headquarters at Weehawken, N. J., succeeding **A. H. Wright**, whose promotion to superintendent of the River division was announced in the *Railway Age* of December 20.

**C. L. Woodcock**, superintendent of the Arizona Eastern, with headquarters at Phoenix, Ariz., has been appointed superintendent of transportation of the Inspiration Copper Company, with headquarters at Miami, Ariz. The position formerly held by Mr. Woodcock has been abolished pursuant to the merger of the Arizona Eastern with the Southern Pacific.

### Traffic

**F. V. Martin**, city passenger agent of the Chicago, Indianapolis & Louisville, with headquarters at Indianapolis, Ind., has been promoted to general agent, passenger department, with the same headquarters. He will take over the duties of **F. B. Humston**, formerly division passenger agent, who died at Indianapolis, on December 16.

**J. R. McClurken**, assistant general freight and passenger agent of the Louisiana & Arkansas, with headquarters at Texarkana, Ark., has been promoted to general freight and passenger agent, with the same headquarters. **F. A. Key, Jr.**, general agent, with headquarters at Shreveport, La., has been promoted to assistant general freight and passenger agent, with the same headquarters.

**F. T. Grant**, general passenger agent of the Boston & Maine, with headquarters at Boston, Mass., has been appointed to the newly created position of passenger traffic manager, with the same headquarters. **W. O. Wright**, assistant general freight and passenger agent, with headquarters at Portland, Me., succeeds Mr. Grant as general passenger agent at Boston. **P. J. Mullaney**, chief clerk in the office of the vice-president at Boston, has been appointed assistant general freight and passenger agent, with headquarters at Portland, succeeding Mr. Wright.

### Mechanical

**R. H. Bates** has been appointed mechanical engineer of the Chicago Great Western, with headquarters at Oelwein, Iowa. In the *Railway Age* of December 13 it was incorrectly reported that **R. H. Baker** had been appointed mechanical engineer.

### Obituary

**F. B. Humston**, division passenger agent of the Chicago, Indianapolis & Louisville, with headquarters at Indianapolis, Ind., died in that city on December 16.

**E. R. Puffer**, assistant freight traffic manager of the Chicago, Burlington & Quincy, with headquarters at Chicago, died in that city on December 18. Mr. Puffer was 72 years of age and had been in the service of the Chicago, Burlington & Quincy for 56 years.

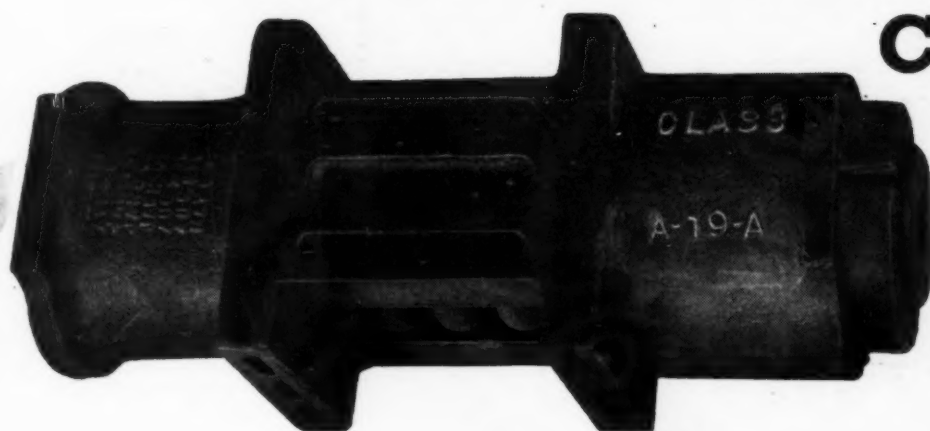


# MINER

## Friction Draft Gear

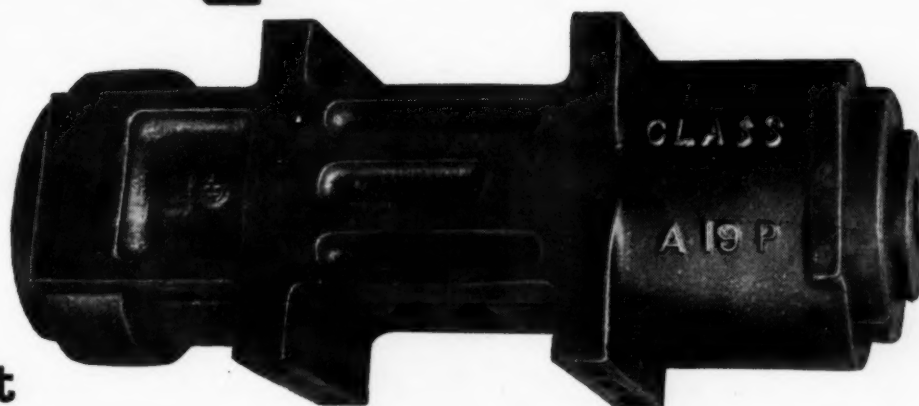
### Class A-19

For  
Freight  
Equipment



### Class A-19-P

for  
Passenger  
Equipment



These powerful shock absorbers are exactly interchangeable with Miner Tandem Spring Draft Rigging, and are supplementing the original investment on many thousands of cars as they utilize the original tandem side castings, also the yokes, follower and carrier plates applied to your equipment years ago.



*Lewis Special conforms to A.S.T.M. Specifications A-84-21. High in tensile, yield point, reduction and elongation.*

**S**TAYBOLT failures are costly in labor and idle locomotives. The cost of a staybolt is swallowed up in the labor required to remove the old bolt and apply the new one. Add to this the delay while the locomotive is in the shop. Truly it is real economy to buy good iron in the first place.

Lewis Special is good iron. Its uniformity has made it popular wherever it has been used. Send for samples and make your own tests.

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# Railway Age

Vol. 77 December 27, 1924 No. 26



C. P. R. Bridge at Reversing Falls, St. John, N. B.

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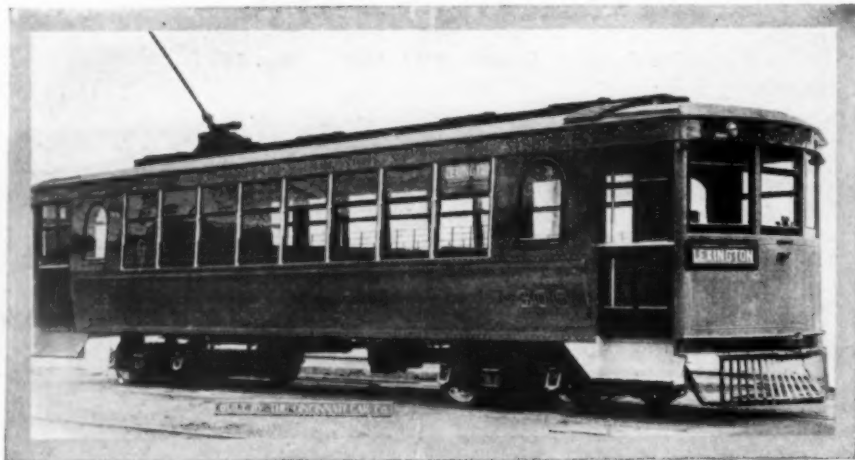
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**A**RMCO Ingot *Iron* is used in the new traction coaches recently built for the Kentucky Terminal Traction Company.

A dominant characteristic of ARMCO Ingot *Iron* is its long-lasting quality. Not only does ARMCO Ingot *Iron* have an unusually long life of service, but it is soft and pliable, a feature which makes it ideal for traction car construction.



Manufacturers and engineers, who want long-lasting sheet metal, always specify ARMCO Ingot *Iron*, the purest commercial iron made in an open hearth furnace.

The *Blue* triangle on every sheet identifies ARMCO Ingot *Iron*.

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ON the railroads there is no place for the loafer or ineffective worker.

Every dollar and every hour must yield results.

Yet there is a high priced worker who might as well be lying idle as doing his present preventable task.

We refer to the worker called capital. Capital tied up in wheels awaiting turning; in shops to do the turning and equipment to move the turned wheels. On a road the total reaches hundreds of thousands of dollars.

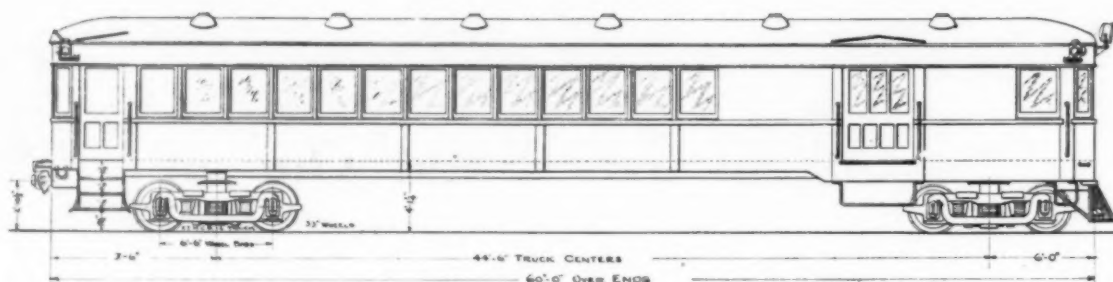
This expense is all avoidable. The steel wheel you desire can be had without such capital commitment.

Davis "One-Wear" Steel Wheels give the desired strength and wear without the maintenance.

Permit us to show why the Davis "One-Wear" Steel Wheel is the logical solution to your wheel problem.

**American Steel Foundries**  
NEW YORK CHICAGO ST. LOUIS

# We are building Brill Gas-electric Cars



Length of baggage compartment, 19 ft. 3 in.; seating capacity of passenger compartment, 50; weight, 75,000 lb.

**New developments under construction adapted to heavy-traveled lines. Low operating cost.**

Following the success which attended the operation of Brill Model 55 Gasoline Cars on branch and short line railroads, our Automotive Engineers designed such larger units as the Brill Models 65 and 75 Gasoline and Gas-electric Cars.

The Model 75, which has just been completed and now available for demonstration, is the most highly powered mechanical trans-

mission gasoline car yet developed.

For the heavier-traveled lines interested in Gas-electric units, there has been developed the Brill Gas-electric Car illustrated above. A number of these are now under construction at the present time.

We will be very glad to furnish complete information relative to these Gas-electric Cars upon request.

AUTOMOTIVE CAR DIVISION

**The J. G. Brill Company**

Philadelphia, U. S. A.







## No Locomotives Held Out of Service on Account of Applying Train Control

The Railway Age of November 8th, 1924, publishes an account of the Elgin, Joliet & Eastern Railroad Company having thirty of their large Mikado engines equipped with the Miller train control, saying:

"The device as installed consists of the straight automatic stop with permissive feature in accordance with the provision of the latest order of the Interstate Commerce Commission. It permits the engineman to forestall an automatic brake application at de-energized ramps. The simplicity of design and ease of application of this device made it possible for one mechanic and helper and one pipe fitter and helper to equip these engines at the rate of practically one engine each day and required no locomotives to be held out of service for applying the device."

STAUNTON, VA.

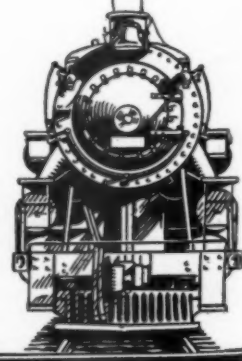
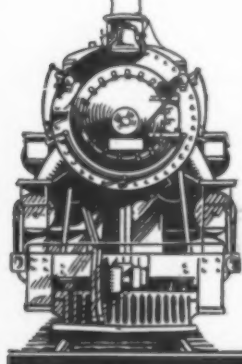
**Miller Train Control**

DANVILLE, ILL.

**T**HE cost of locomotive repairs includes a list of accumulated expenses with many items not apparent at first glance. Direct Material and Labor are quickly acknowledged but the cost of floor space, power, tools, maintenance, and other items usually included in manufacturing "overhead" are considerable items. Modern industrial plants figure that these amount to more than labor and material.

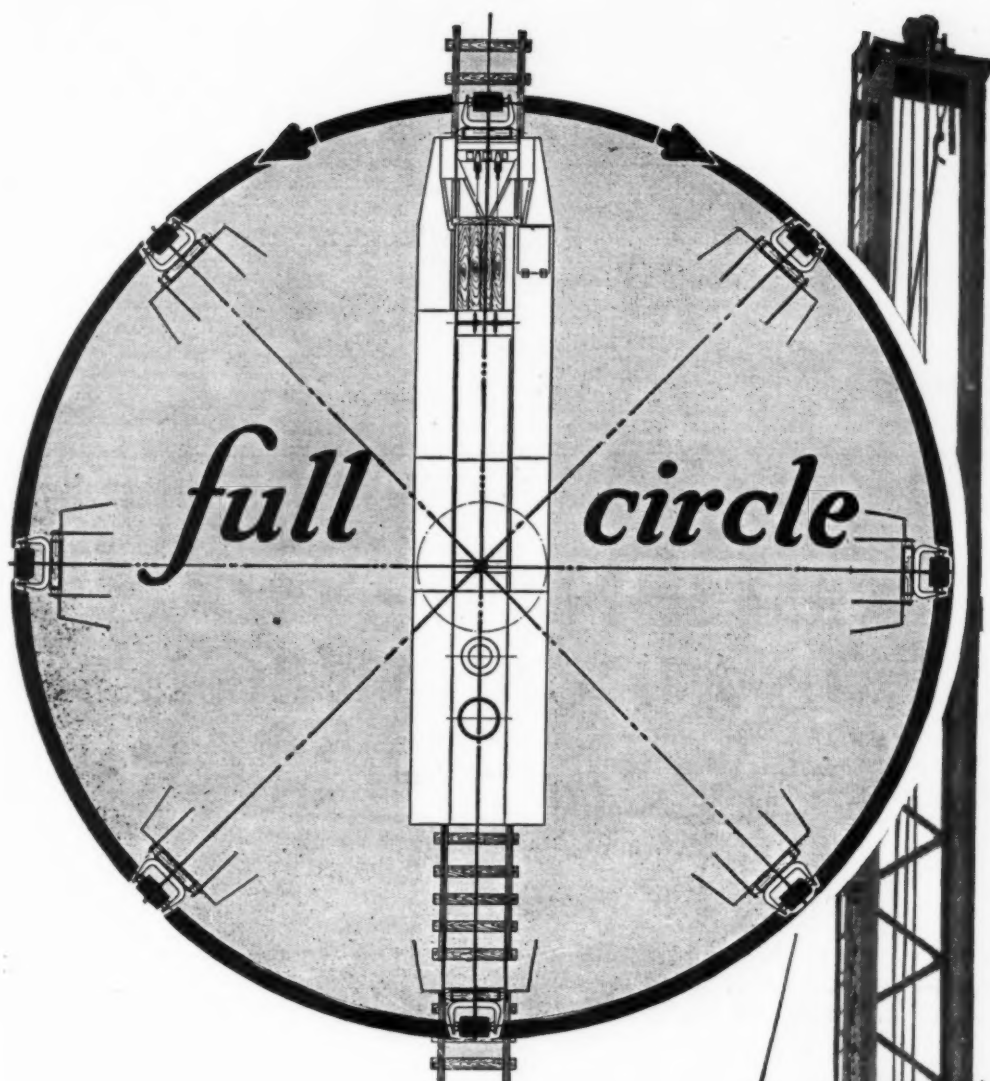
Then, too, there is a definite expense attached to the locomotive which stands idle during the repair period, and even a greater loss of the revenue which might be earned with the unit in service.

In every item of expense there is a generous margin of saving obtained by the Bullard Vertical Turret Lathe. The total amount of saving is many times more than at first appears. The Labor economy alone has been reported from one shop as \$2600 in one year. The total economy represents a very good return on the investment in a Bullard.





# No. 14 Pile Driver



Driving piles 33' 9" from center of track with No. 14 Full Circle Pile Driver.

## Specifications

**Engines**—hoisting 10" x 10"; travel and swing 10" x 10".

**Boiler**—horizontal 60" x 12' 5", 194 2" tubes, working pressure 175 lbs.

**Trucks**—capacity 150,000 lbs., journals 6" x 11".

**Travel Speeds**—fast 20 m. p. h., slow 7½ m. p. h.

**Draw bar pull**—slow speed 10,000 lbs., sluing speed 1 rev. per min.

**Single line pull**—pile 10,000 lbs., hammer 10,000 lbs.

**Single line speed**—pile 225 ft. per min., hammer 225 ft. per min.

**Height of leads**—42 ft.

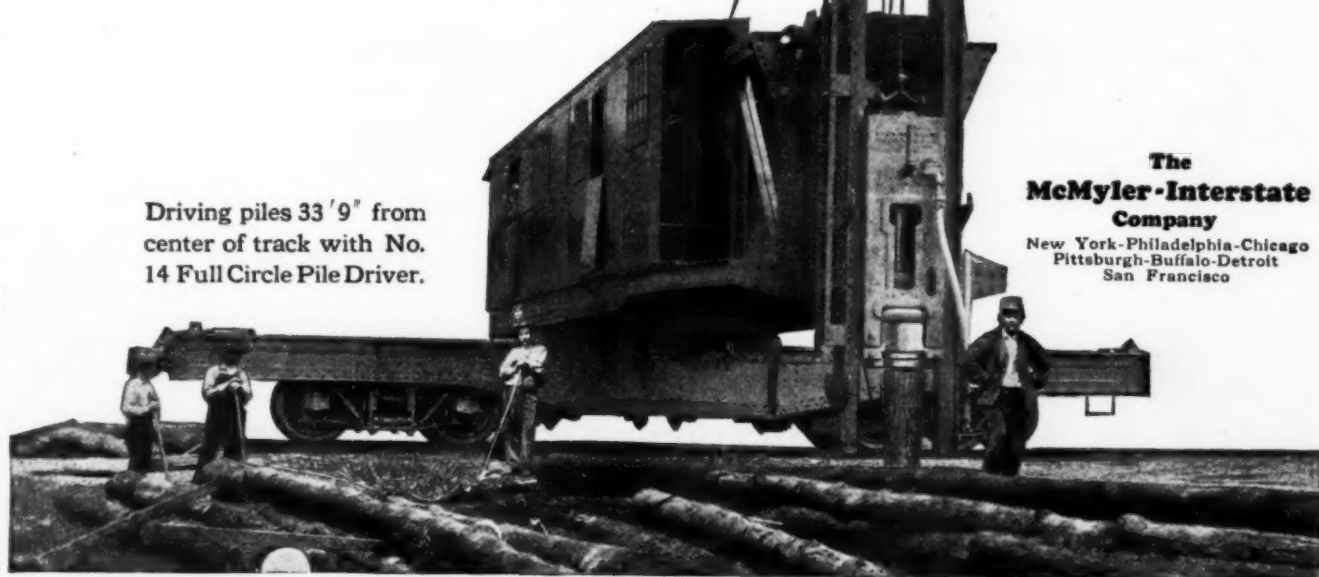
**Batter limits**—2" in 12".

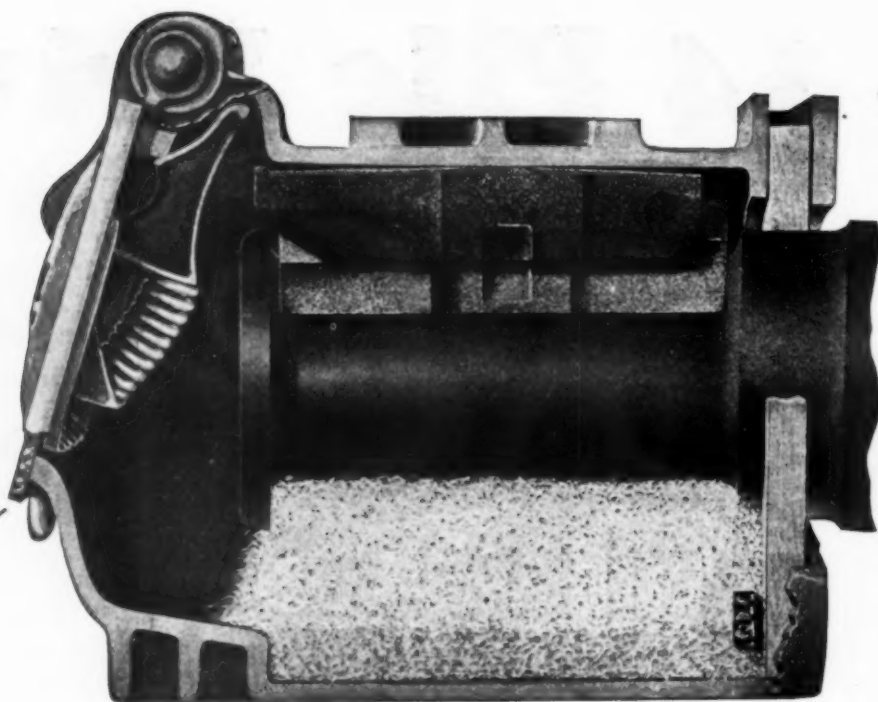
**Weight**—shipping, not including hammer 186,000 lbs., operating, not including hammer 206,000 lbs.

**Brakes**—complete locomotive type air brakes.

**The  
McMyler-Interstate  
Company**

New York-Philadelphia-Chicago  
Pittsburgh-Buffalo-Detroit  
San Francisco





## NATIONAL COILED SPRING JOURNAL BOXES

with

**Tatum-Zell Waste and Oil Savers**

Insure

**Perfect Lubrication**

Of Car Journals and

**REDUCE TRAIN DELAYS**

The Packing is kept beneath, and in contact with the journal, without the use of the customary "waste-plug."

The Oil which ordinarily fills the dust guard pocket, and then follows the axle out through the rear box opening, is returned to the bottom of the box to be used again.

This means a saving of both Oil and Waste.

Write for Circular No. 75-A

**NATIONAL MALLEABLE AND STEEL CASTINGS CO.**

Successor To

**THE NATIONAL MALLEABLE CASTINGS COMPANY**

*General Office*—Cleveland, O.

*Works:* Cleveland, Chicago, Indianapolis, Toledo, East St. Louis, Ill., Sharon, Pa., Melrose Park, Ill.





# Railroad Lubrication

*"When Galena Service goes in—  
Lubrication Troubles go out."*

## Oils That Steal Maintenance Funds

The average man—particularly the American—is a "good loser." He pays a bet cheerfully, or sustains a business loss complacently. But he would rather lose a ten dollar bill and know where it went, than to suffer the loss of a "quarter" through a hole in his pocket, or by having it stolen.

In effect, improper lubrication is much the same as a hole in the pocket—even worse. An inferior or unsuitable railroad lubricant is like a thief in the night—just as insidious, just as subtle and underhanded. It steals from repair funds, from upkeep allowances, from the coal pile. It works secretly and stealthily, but pilfers continuously from the railroad's treasury.

There is but one safeguard against the hidden losses of lubrication—the installation of proper oils and correct methods of use. These constitute literally a thief-proof vault that guarantees security to the lubrication money the road sets aside for the protection of its equipment.

No investment that a railroad can make will bring a surer or larger proportionate return on the principal than the money expended for the purchase of efficient and dependable lubricants. GALENA OILS and SERVICE have saved millions for American railroads by preventing or minimizing the hidden losses in lubrication that build up maintenance expenses. The road using Galena lubrication is safeguarding its equipment and operating service as effectively as its Treasurer is protecting the road's money or securities by bank depository.



## Galena-Signal Oil Company

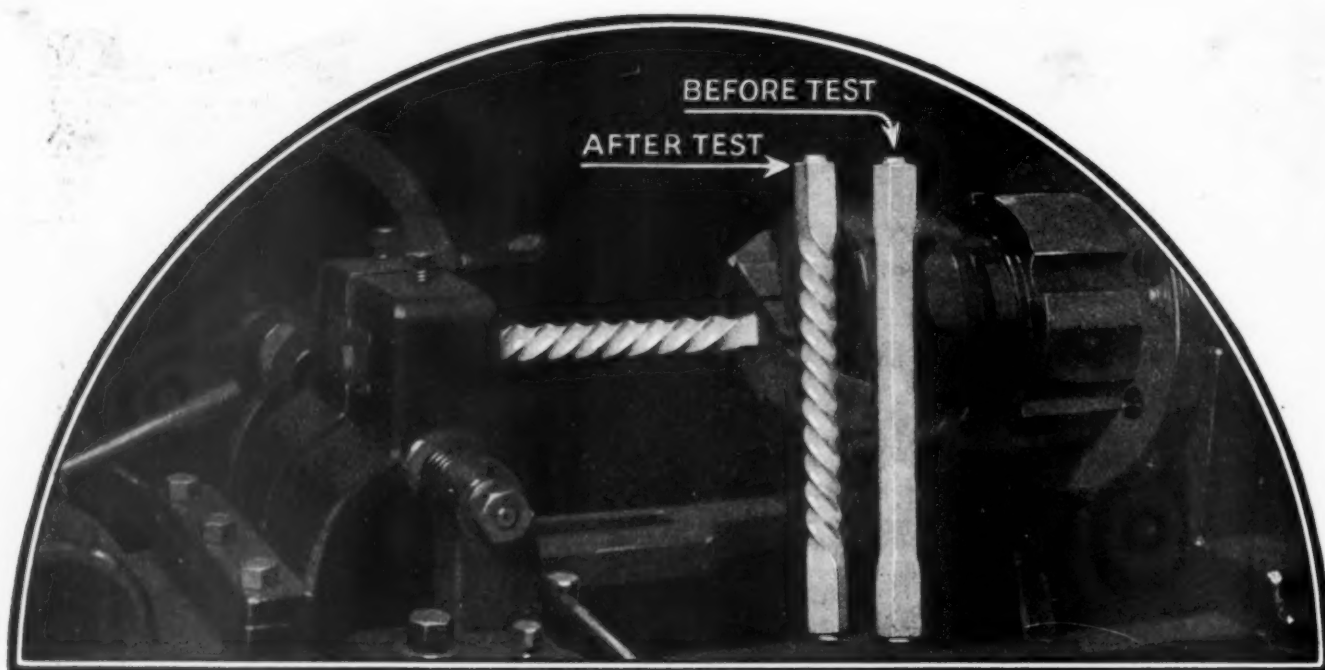
New York

Franklin, Pa.

Chicago

and offices in principal cities





Testing machine and malleable test bar  $\frac{3}{4}$ " square at ends and 11" long used by the Association's consulting engineer to make torsion tests on the product of member companies.

**Certificate Holders for the Quarter  
Ending September 30th, 1924**

Albany Malleable Iron Co.	.....	Verona, N. Y.
Albion Malleable Iron Co.	.....	Albion, Mich.
American Malleable Castings Co.	.....	Marion, O.
American Malleable Co.	.....	Lancaster, N. Y., and Orono, Mich.
Baldwin Malleable & Mfg. Co.	.....	South Milwaukee, Wis.
Baltimore Malleable Iron & Steel Casting Co.	.....	Baltimore, Md.
Belle City Malleable Iron Co.	.....	Marion, Wis.
Chas. Bitt Co.	.....	Milwaukee, Wis.
Chicago Malleable Castings Co.	.....	West Pullman, Chicago, Ill.
Columbia Malleable Castings Co.	.....	Columbus, Pa.
Columbus Malleable Iron Co., The	.....	Columbus, O.
Danville Malleable Iron Co.	.....	Danville, Ill.
Dapine Malleable Iron Co.	.....	Dapine, O., Trossen, O., and Canton, O.
Deuster Malleable Iron Co.	.....	Decatur, Ill.
Devlin Mfg. Co., Thomas	.....	Philadelphia, Pa.
Eastern Malleable Iron Co., The	.....	Hagerstown, Md.
Works, Hagerstown, Md.; Bridgport Malleable Iron Works, Bridgeport, Conn.; Troy Malleable Iron Works, Troy, N. Y.; Wilmington Malleable Iron Works, Wilmington, Del.; Vulcan Iron Works, New Britain, Conn.		
Erie Malleable Iron Co.	.....	Erie, Pa.
Federal Malleable Co.	.....	West Alle, Wis.
Fort Pitt Malleable Iron Co.	.....	Pittsburgh, Pa.
Fraser & Jones Co.	.....	Syracuse, N. Y.
General Electric Co.	.....	Erie, Pa.
Glancy Malleable Corporation	.....	Waukegan, Wis.
Illinois Malleable Iron Co.	.....	Chicago, Ill.
Iron Malleable Iron Co.	.....	Fairfield, Ia.
Island Malleable Iron Co.	.....	Kalamazoo, Mich.
Lacrosse Mfg. Co.	.....	Lacrosse, N. H.
Lakeland Malleable Castings Co.	.....	Racine, Wis.
Lancaster Foundry Co.	.....	Lancaster, Pa.
Lock-Bell Co.	.....	Indianapolis, Ind.
Marion Malleable Iron Works	.....	Marion, Ind.
Moline Malleable Iron Co.	.....	St. Charles, Ill.
National Malleable & Steel Castings Co.	.....	Cleveland, O., Chicago, Ill., Indianapolis, Ind., Toledo, O., St. Louis, Ill.
Northern Malleable Iron Co.	.....	St. Paul, Minn.
Northwestern Malleable Iron Co.	.....	Milwaukee, Wis.
Peoria Malleable Castings Co.	.....	Peoria, Ill.
Pittsburgh Malleable Iron Co.	.....	Pittsburgh, Pa.
Shore Island Malleable Iron Works	.....	Hingham, R. I.
Rockford Malleable Iron Works	.....	Rockford, Ill.
Ross-Moran Foundries, The	.....	Chattanooga, Tenn.
St. Louis Malleable Casting Co.	.....	St. Louis, Mo.
Baginaw Malleable Iron Co.	.....	Baginaw, Mich.
Brandsford Malleable Castings Co.	.....	Troy, N.Y., Ind.
Burrell Co., The	.....	South Milwaukee, Wis.
Superior Steel Castings Co.	.....	Boston Harbor, Mich.
Syracuse Co., T. H., The	.....	Rochester, N. Y.
Temple Malleable Iron & Steel Co.	.....	Temple, Pa.
Terra Malleable & Mfg. Co.	.....	Terra Haute, Ind.
Trenton Malleable Iron Co., The	.....	Trenton, N. J.
Union Malleable Iron Co., The	.....	E. Miller, Ill.
Vermilion Malleable Iron Co.	.....	Hampton, Ill.
Wagner Malleable Castings Co.	.....	Hammond, Ind., and Beloit, Wis.
Warren Tool & Forge Co.	.....	Warren, O.
Webster Mfg. Co., The	.....	Chicago, Ill.
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York Mfg. Co.	.....	Tyrt, Pa.
Zanesville Malleable Co.	.....	Zanesville, O.

## Constant Testing to Uphold the Quality of Certified Malleable

### No. 1—Torsion Tests

This is an actual photograph of torsion test being made on malleable test bars submitted regularly by member companies to the association's consulting engineer.

The usual conception of a casting is one of brittleness and really few people realize that high grade malleable iron produced by companies listed on this page will uniformly stand such treatment as this test indicates.

The bars in this picture have been twisted at lathe speed through three complete turns or 1080 degrees with no indication of fracture. During the annealing process, malleable iron gives up its brittle characteristics and develops unusual mechanical properties such as ductility, great strength, toughness and easy machining qualities.

Certified Malleable Iron is the product of those plants who receive a quarterly certificate of merit from the consulting engineer of The American Malleable Castings Association; certifying that their product has met his exacting physical tests and that their plant practice, as shown by rigid inspection, insures the production of uniform malleables of the highest quality and integrity.

AMERICAN MALLEABLE CASTINGS ASSOCIATION  
UNION TRUST BUILDING CLEVELAND, OHIO

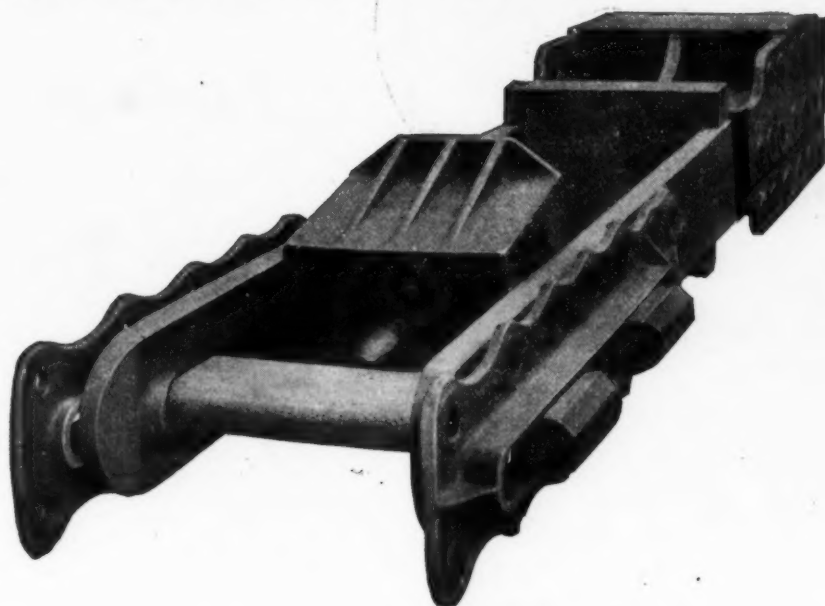


# CERTIFIED-MALLEABLE CASTINGS



# FARLOW

## DRAFT ATTACHMENTS



### Farlow Records

**F**ARLOW Draft Attachments have a service record of over 19 years.

They have been applied to more than 685,000 cars.

They have strength for the heaviest cars, the longest trains and the roughest yard service.

Farlow Draft Attachments decrease maintenance costs and increase revenue car hours.



## THE SYMINGTON COMPANY

SUCCESSOR TO

### THE T. H. SYMINGTON COMPANY

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There is a saving—a very definite one—in Empire nuts, despite their slightly higher price, because they banish all the waste and trouble that follow the use of hot pressed nuts. They are clean, accurate and strong—free from the burrs, scale, soft edges and other imperfections that make hot pressed nuts such a source of waste and expense.

Empire nuts cost just a trifle more—but they save the difference a hundred times over.

Write for the Empire Catalog.



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**BOLT & NUT COMPANY**

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SOLE AGENTS: THE RAILWAY AGE COMPANY, NEW YORK, N.Y.

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Grade 4 and grade 5 ties produced for a large Class 1 Railroad on a service contract for its 1924 tie requirements.

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*International* does not promise quality; by the thoroughness of its methods it assures it. That's sound business—for mere claims of quality cannot weigh against Proof of Quality—and *International* does present Proof that cannot be denied.

Every *International* Tie is permanently marked with our monogrammed dating nail as assurance to you that the timber is sound, the grade accurate, the seasoning thorough and the treatment correct.

*International* stands squarely behind every *International* Tie. It does not relinquish its interest in its ties after delivery—on the contrary it wants the name *International* Ties in your yards, on your right of way and in your track.

*The name International lives with the ties. It is your security.*

**International Creosoting & Construction Co.**

General Offices—Galveston, Texas

Plants: Texarkana, Texas Beaumont, Texas Galveston, Texas

# *International*

## Standard Specification Ties

# RALSTON CARS



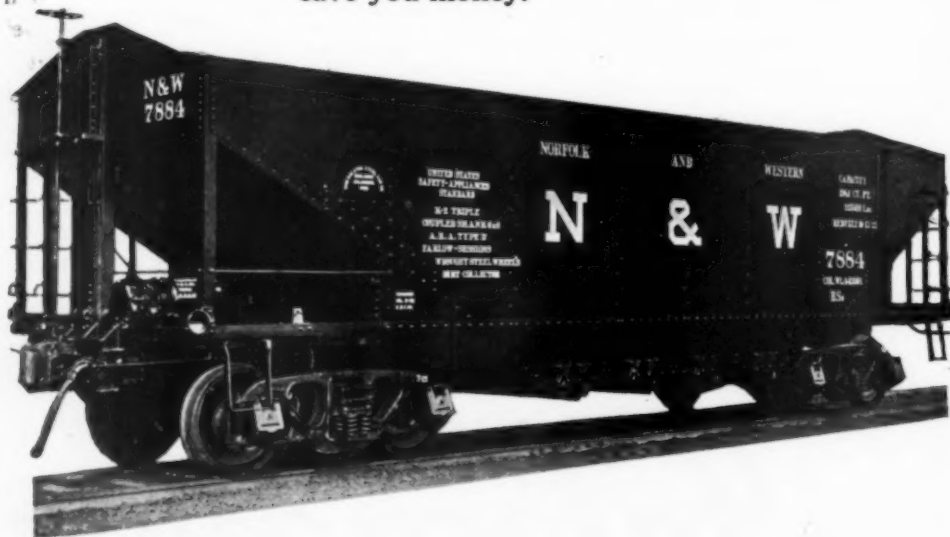
**T**HE outstanding endurance of Ralston built cars and freedom from repairs has firmly established their incomparable value under every service condition.

It's on this merit basis of superior performance that Ralston Cars are sold and re-sold.

Behind every Ralston Car is an organization founded upon experience and pioneering that especially qualifies it to meet the needs of railroads for all steel and composite cars that are equal to any responsibility.

Ralston Service includes rebuilding—repairing, or the furnishing of car parts at a cost that will save you money.

**ALL  
STEEL  
AND  
COMPOSITE**



**THE RALSTON STEEL CAR CO.**  
COLUMBUS OHIO



*Permanent  
roads are a  
good investment  
—not an expense*

## **How the Motor Industry Set the Pace for Highway Building**

The "horseless carriage" of yesterday is now being produced as the modern automobile at the rate of 4,000,000 a year. The total number of motor vehicles registered in the United States is over 16,000,000.

And automobiles built today are more than ever capable of economically serving both business and recreation needs.

But there is an obstacle standing in the way of their maximum service to owners.

For while the automobile industry made paved highways an economic necessity, the mileage of such roads is today years behind the requirements of modern traffic.

Happily motorists everywhere are boosting for more and wider paved highways.

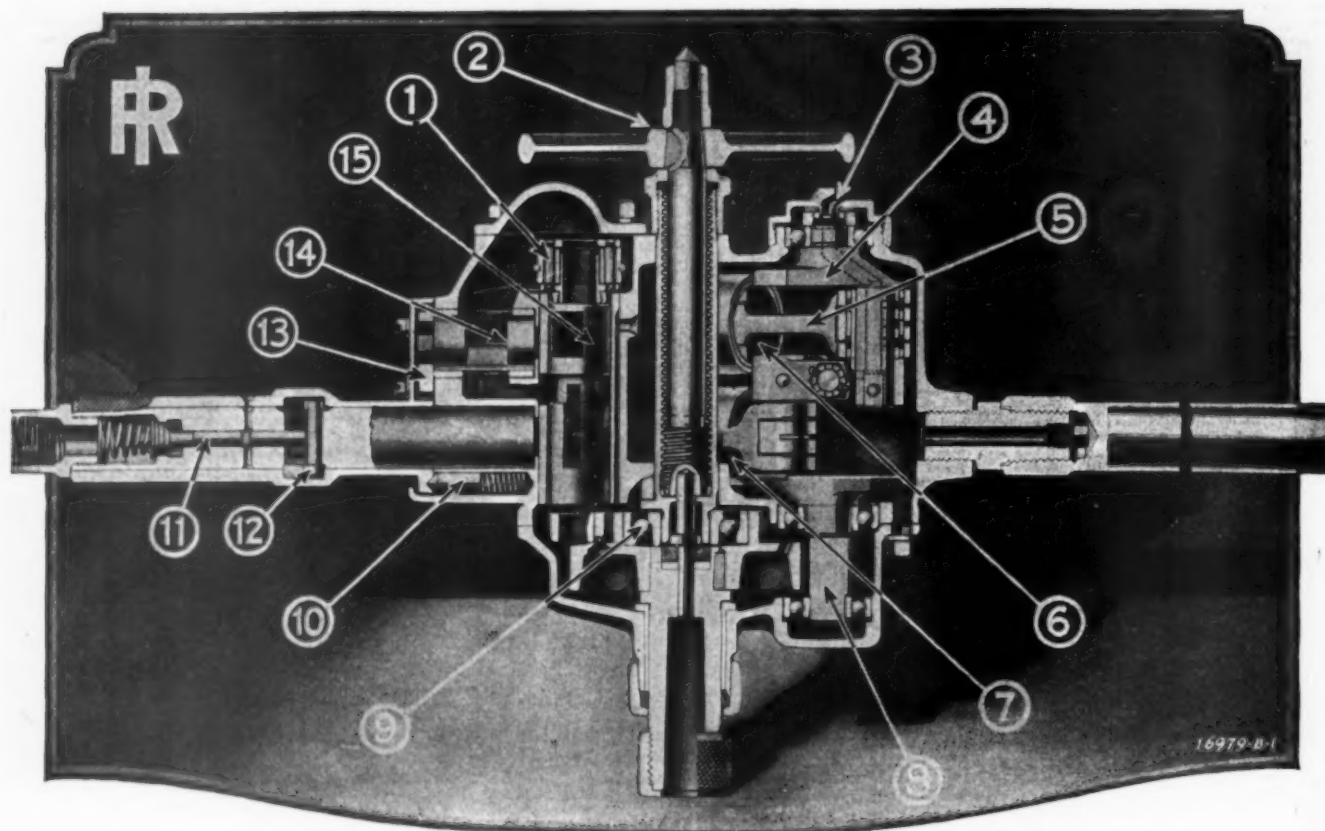
And extensive experience has taught them that Concrete Highways are one of the best all-around investments they can make—an investment that pays big dividends.

As one of our 16,000,000 motorists you know better than anyone else the need for more and wider Concrete Roads. Start now to help your local officials provide them.

### **PORTLAND CEMENT ASSOCIATION**

*A National Organization to Improve and Extend the Uses of Concrete*

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Birmingham	Denver	Kansas City	New Orleans	Philadelphia	Seattle
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2. FEED SCREW—Large diameter—ample length and non-telescopic-drop forged feed handle—every part, including the hardened steel center, easily renewed. Feed screw assembly easily replaced by a grip handle.
3. CASE VENT—Through crank pin and crank to atmosphere—vents case, eliminates grease blow, lubricates and cools crank pin, centrifugal force throws grease into crank pin bearings.
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9. THRUST BEARING—Combination radial and thrust bearing for high speed ratios instead of usual plain radial and ball thrust bearings.
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12. A typical small refinement—rollers for pin riding on cam surface.
13. REVERSE VALVE SECTOR—Rolls reverse valve when live air handle grip is turned.
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**Four sound reasons  
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The Huntoon construction employs the principle of the truss for developing maximum bearing power.

The rectangular tension member has its ends upset to receive the channel compression member, forming a machined joint which carries the full stress independently of the rivets.

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The Huntoon Interlocked End provides great strength — prevents side displacement of members — eliminates all rivet strain — results in minimum deflection under load.

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NEW YORK  
25 West Forty-Third St.

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Railway Exchange

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Bradford Rocker Gear  
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(Reversible Strut)  
Huntoon Rigid Strut Brake Beam  
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## A. R. A. Freight Bolster Springs

We are prepared to furnish promptly all types of freight bolster springs, of which the A. R. A. groups with pressed steel plates, as shown above, are the ones most commonly used.

These can be supplied with various numbers of coils suitable for all sizes of cars to meet your particular requirements.

*For longer and better service specify "Railway" Springs*

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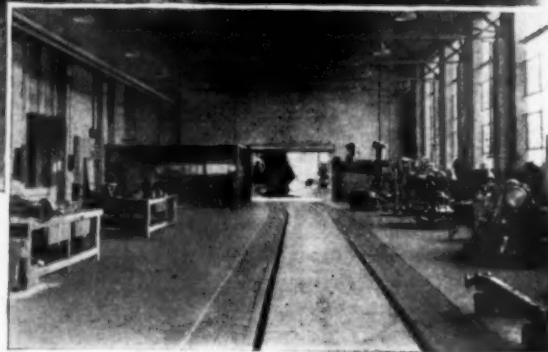
Denver, Colo.  
Montreal, Que.



## *At the Engine Terminal*



*View shows exterior of roundhouse, electrically operated turntable, with electric tractor and a dead engine hauling device. The small view shows interior of machine shop, with G-E Motors driving machine tools*



### Service—with G-E Motors

G-E Motors and Controllers are important factors in speeding up locomotives through the engine terminal shown here. Turntable, dead engine hauling device, machine shop, coaling station, ash handling equipment—all are G-E Motor-driven.

Steady, reliable power, with "finger-tip" control, saves valuable minutes—prevents costly delays—which turn many idle locomotives hours into revenue-earning time.

G-E engineers will gladly cooperate with you, and recommend proper electrical equipment.

**General Electric Company**

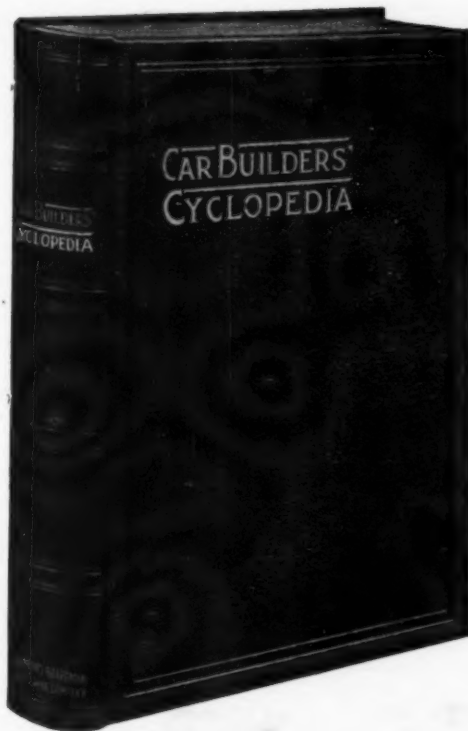
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By E. W. Hartough

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This book not only covers repair work on all types of steel freight cars, but also goes into the subject of steel car construction. Steel frame flat cars, gondola and hopper cars, steel house cars and tank cars are taken up separately, with detailed attention given to the repairs of various parts.

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Lawford H. Fry. Describes the combustion process, shows how to compute efficiency, heat balance, etc. The author is an internationally known authority. Off the press in November, 1924. 161 pages, 38 tables and diagrams, cloth binding. \$4.00.

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A practical work which describes the various problems simply and clearly, without going deeply into mathematics. Gives information as to the layout of everyday jobs, with calculations necessary to determine the sizes of parts, miscellaneous problems, etc. Fourth edition, revised and improved, ready in December, 1924. \$8.

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Simmons-Boardman Publishing Company,  
30 Church Street, New York, N. Y.

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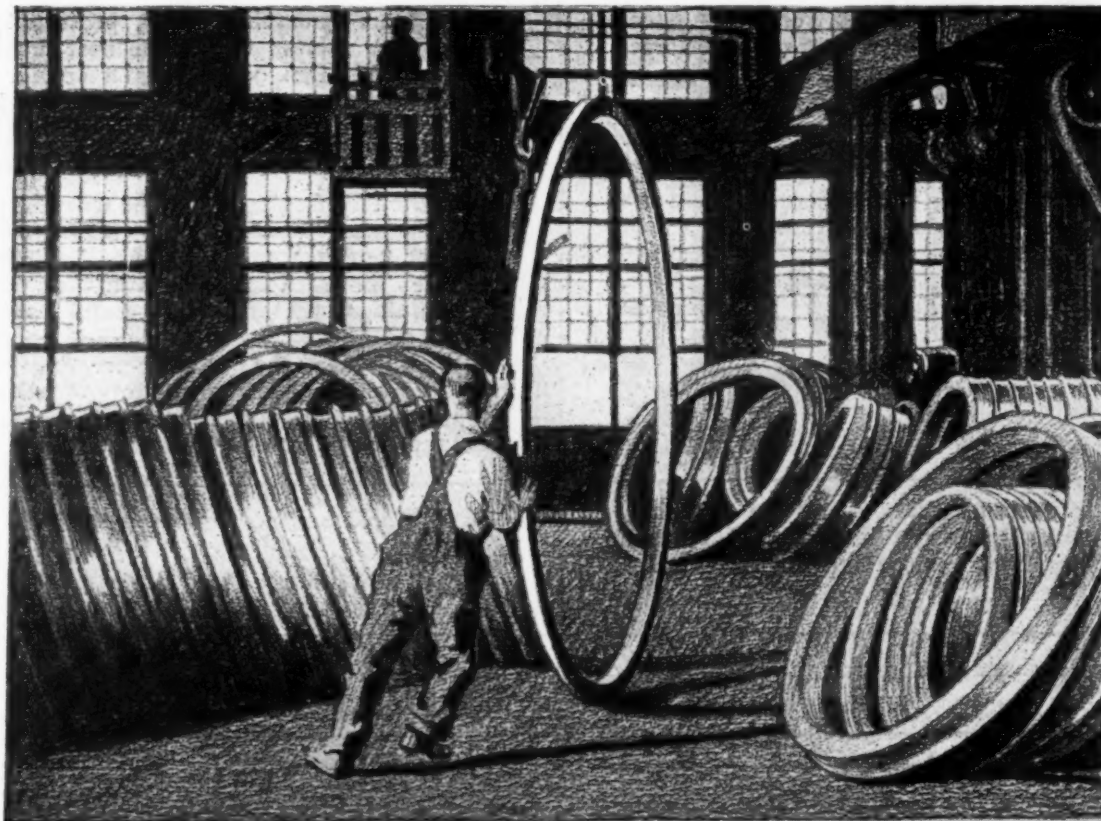
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Position

Road RA-12-27-24.



HANDLING LARGE PIPE FLANGE



*"Not only to make better products but to make them better understood  
—not only to sell but to serve, assisting those who buy to  
choose as well as use their purchases—this is  
the privilege if not the practice of all  
modern manufacturers."—Vauclain.*

# STANDARD STEEL WORKS COMPANY

PHILADELPHIA, PA.

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## Riveted All Steel Roof vs. Dry Lading All-Steel Roof

Made from steel, unprotected from rust. Steel not protected by spelter will begin deteriorating from rust immediately and especially when exposed to weather, rain, and cinders.

Made from galvanized steel, protected from rust by its spelter coat. The best protection against corrosion of steel is a spelter coat. Galvanized steel will last indefinitely, as it will not deteriorate from rust.

The weather-proofing means serve to hold the car together. This detracts from what a roof is supposed to do, namely, turn the weather. The weather-proofing steel being under strain, is undoubtedly more subject to deterioration from rust.

With the Dry Lading Roof, the weather-proofing means serve only to shed the weather; its carlines, purlines and ridge pole hold the car together more effectively. Whether on cars or buildings, the most successful roofs are those used for weather-proofing purposes only, as when the weather-proofing means are used to hold a car or building together, the weather-proofing qualities suffer from both a leakage and maintenance standpoint.

Has box sections that cannot be protected from rust. Closed pockets like these retain moisture and corrode the unprotected steel.

Has no box, pockets or closed sections.

Uses ten carlines pressed from 7/64 in. steel.

Uses thirteen carlines fabricated from uniform 1/4 in. rolled section.

Attention is called to the fact that cinders will cling on a roof made from steel that is not galvanized.

Cinders will not cling on a roof that is galvanized—either the vibration of the car or wind will remove the cinders.

Cost of maintenance due to corrosion is excessive.

No maintenance due to corrosion.

Repairs difficult—cost excessive.

Repairs simple—costs nominal.

In erection of new cars, the labor of application is six times greater.

Only 1/6 of the amount of labor required.

Reduces production of cars on account of greater amount of labor and track space required.

Maximum production of cars. All erecting shop tracks may be used for building of cars.

Roofing sheets of scant 3/32 in. steel are intended to hold car frame square. Cars so equipped get out of alignment, as riveted roofs are found buckled.

Carlines, purlines and ridge pole are used to hold car frame square. Dry Lading Roofs are not found buckled.

Examination of riveted roofs after five years' service shows bad deterioration from rust. Design does not admit of successful use of galvanized steel.

Examination of Dry Lading Roof does not show any noticeable rust deterioration, as it is made from galvanized steel.

Rust, the Red Devil, goes over the top,  
To scatter cinders and water;  
The sulphuric acid he thereby creates  
Ruins riveted roofs—what a slaughter!

But sometimes it happens his plans are all wrong,  
And the Red Devil roars:—"I'm a sinner;  
But I can't get a bite on a Galvanized Roof,  
On the Black there's a heluva dinner."

**HUTCHINS CAR ROOFING COMPANY**  
DETROIT MICHIGAN  
ESTABLISHED 1880



## Speed

**H**E told me that high power and speed made it possible for his road to get more tonnage over a single track than has ever before been accomplished anywhere.

Present development of high hauling capacity at higher speeds without increasing fuel consumption or total weight is exactly where the improved locomotive fits into and is a necessary part of the increasing economy of operation.

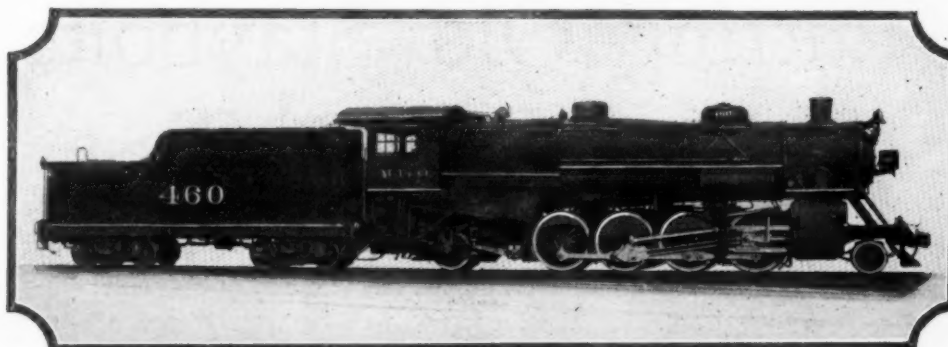
G. M. BASFORD COMPANY  
17 East 42nd Street  
New York City



# This Is Great BOOSTER Weather

THERE IS STILL  
TIME for you to act  
before this picture  
becomes a serious  
reality. Some roads  
are putting on  
BOOSTERS  
at the rate of five  
per month in each  
of their shops.





## CAPACITY

**G**REATER sustained capacity, more ton-miles per hour, is the fundamental object in recent locomotive designs.

This means doing more work with one new locomotive than with any locomotive you now have. It means maintaining established limited schedules with heavier trains. It means handling present traffic with fewer

trains. It means increasing track capacity without the expense of new track construction.

In a word, greater capacity means economy in operation.

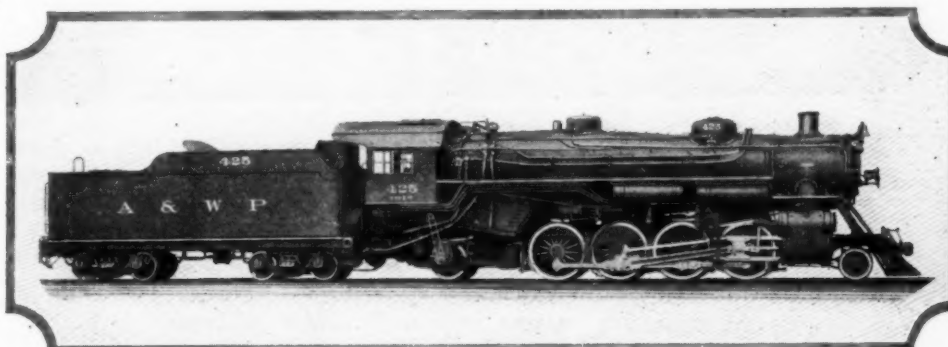
The railroads with whom Lima is co-operating on new power appreciate the full meaning of "increased capacity".

## LIMA LOCOMOTIVE WORKS

INCORPORATED

Lima, Ohio

17 East 42nd St., New York



## Putting Old Staybolts To an Unusual Test

A NUMBER of staybolts of Rome Superior Staybolt Iron were removed from a locomotive that was undergoing a general shopping.

These Rome Superior bolts were apparently as good as new. In fact, their condition was so good for bolts that had been in service that it was decided to test them. Accordingly, the *old* bolts were nicked, bent and put through all the standard tests that are ordinarily applied only to new iron.

In spite of their period of service, these Rome Superior bolts met every one of the severe tests. Not a bolt failed.

Rather unusual, to find old bolts standing up under the tests applied to new iron. In this instance, it emphasizes something that many railroads have known for years: bolts made of Rome Superior give exceptionally long service.

Specify Rome Superior Staybolt Iron.



### ROME IRON MILLS, INC.

17 East 42nd St., New York

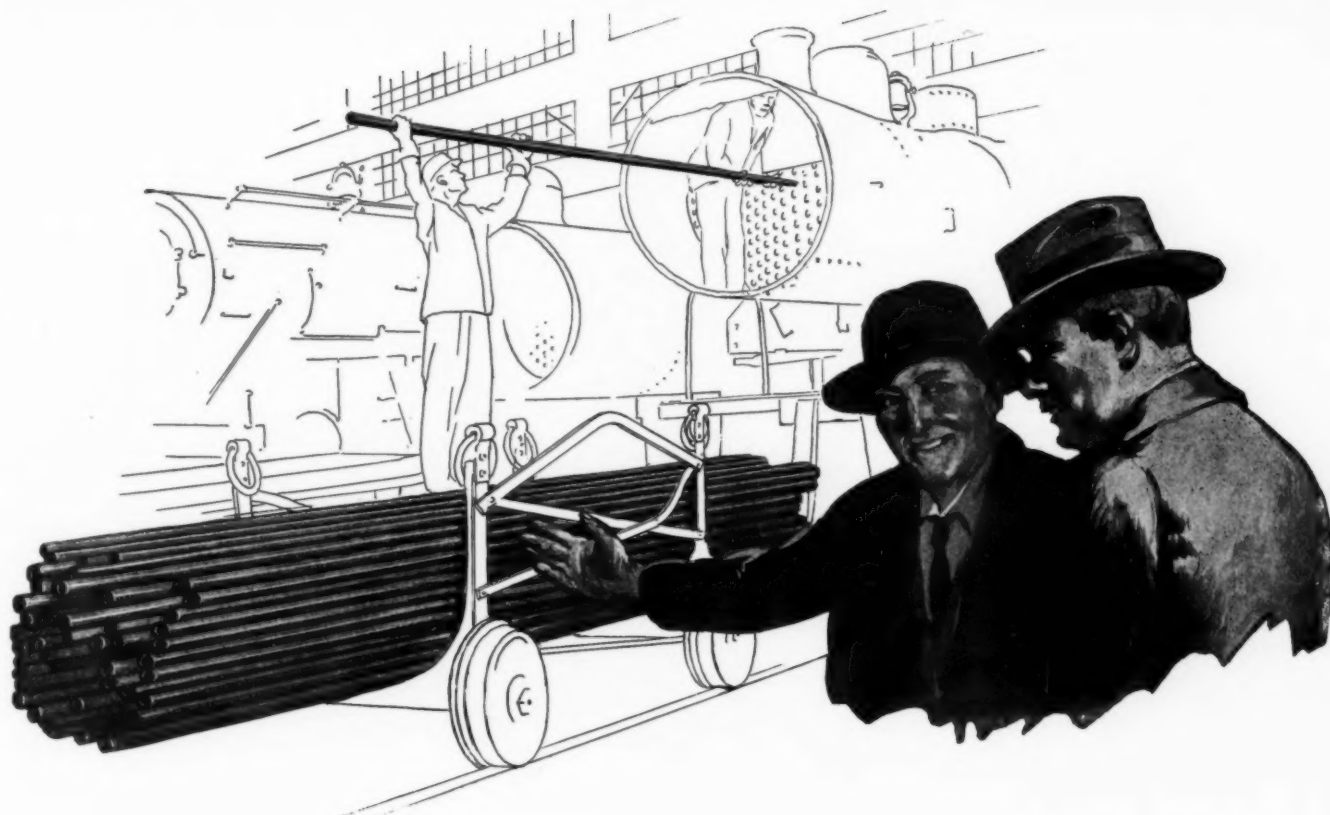
Works at Rome, N. Y.

SAN FRANCISCO SEATTLE BOSTON CHICAGO ST. LOUIS  
HOUSTON RICHMOND MONTREAL

Export Agents:

International Railway Supply Company, New York

## ROME SUPERIOR STAYBOLT IRON



## A Practical Way to Answer a Question

**T**HE General Manager saw that the Flue Shop Foreman did not recognize him, so he asked:

"What kind of tubes do you prefer?"

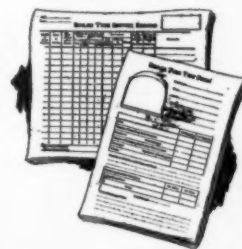
"Charcoal iron," replied the Foreman.

"Why?"

Perhaps the Foreman wasn't prepared to explain how minute cinder and slag inclusions present in charcoal iron resist corrosion. Perhaps he wasn't entirely familiar with the built-up construction of a well-made charcoal iron tube and the effect of that construction on tube life. But he was ready with a very practical answer.

Leading the G. M. to the scrap pile, the Foreman pointed out some tubes, not of charcoal iron, that had been scrapped after nine months of service. Then he showed the General Manager some charcoal iron boiler tubes that had been in service for five years "and still going strong," as he put it.

All the resistance to corrosion that any charcoal iron tube ever had, and all the care and skill that ever went into the making of a boiler tube before the advent of tonnage production, are still put into Parkesburg Tubes of genuine charcoal iron. You can prove this by testing Parkesburgs in your worst service against tubes of other material. We'll gladly furnish printed forms on which you can quickly and easily record comparative tube service. *Send for these forms today.*



The Parkesburg Iron Co., Parkesburg, Pa.

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New York, 30 Church Street—Boston, Oliver Bldg.—Chicago, Fisher Bldg.—Philadelphia, Commercial Trust Bldg.—St. Louis, Security Bldg.—San Francisco, Rialto Bldg.—Montreal, New Birks Bldg.—St. Paul, 906 Merchants Bank Building.

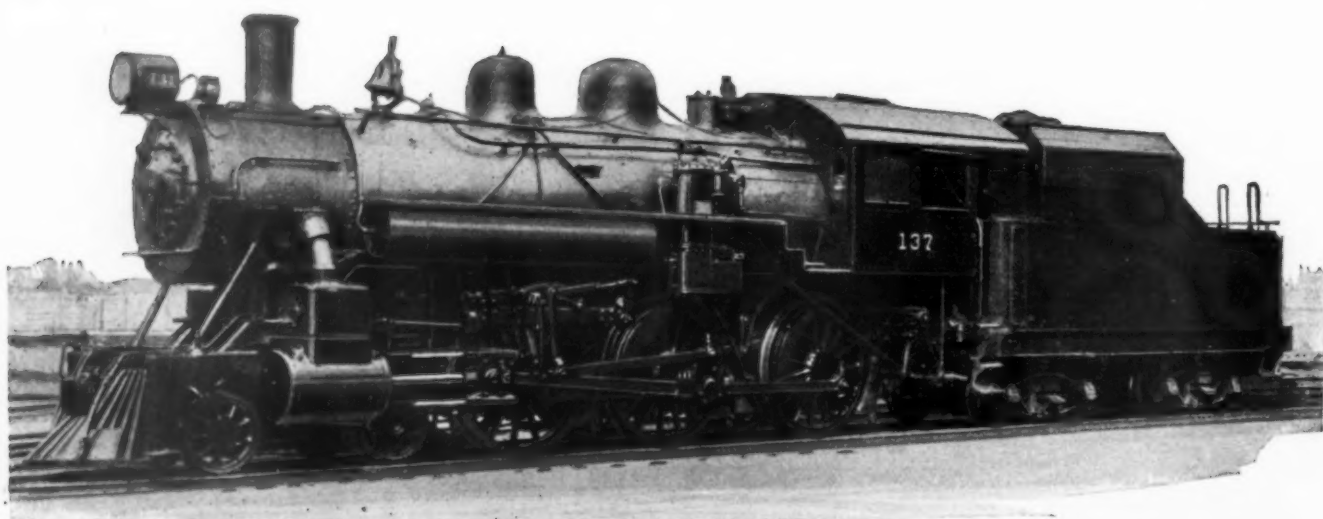
#### EXPORT AGENTS

Wonham, Bates & Goode Trading Corporation, New York

# PARKESBURG TUBES

are real, corrosion-resisting CHARCOAL IRON BOILER TUBES



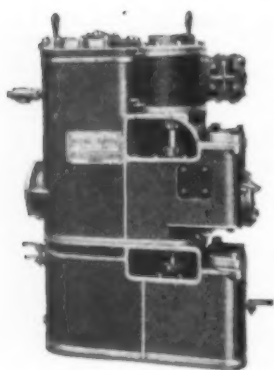


## This is what we call appreciation

ON November 5th we wrote the Vice-President and General Manager of a mid-west railway company asking his permission to refer to his road as users of WORTHINGTON LOCOMOTIVE FEED-WATER HEATERS, and to publish views of his company's locomotives equipped with these heaters.

He came back with a letter from which we quote this paragraph:

"As far as locomotive feed-water heaters and pumps are concerned, I am so well satisfied with the service that we are getting from the Worthington Feed-water Heaters that you are at perfect liberty to use photographs of our locomotives, or refer contemplative purchasers to us, or to take any steps that you may desire to further the interests of your company in this matter."



No test data or performance figures on WORTHINGTON LOCOMOTIVE FEED-WATER HEATERS could offer more convincing proof of their superior service than does this enthusiastic and generous letter.

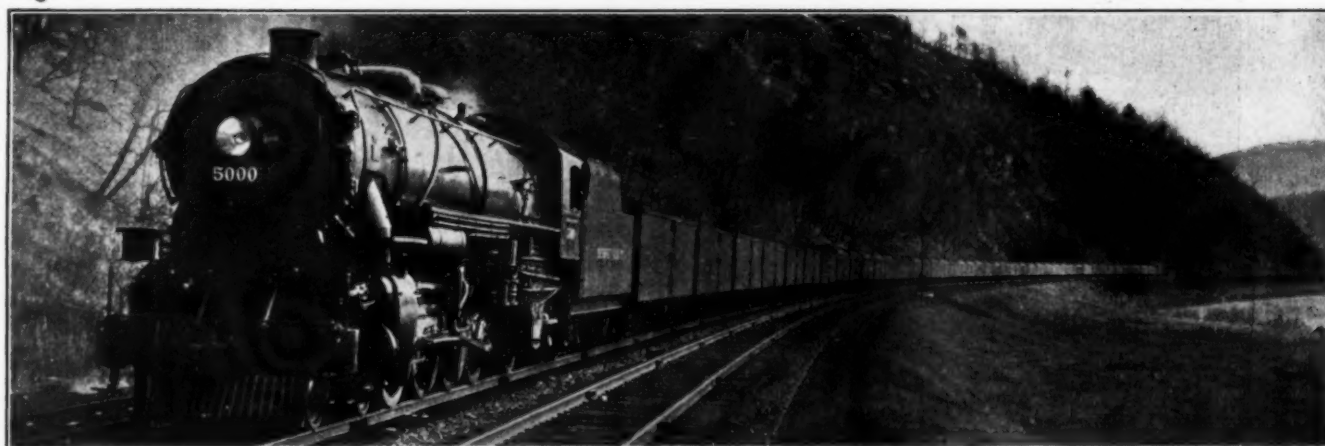
WORTHINGTON PUMP AND MACHINERY CORPORATION  
115 BROADWAY, NEW YORK CITY  
BRANCH OFFICES IN 24 CITIES

# WORTHINGTON



# SHOWING THE WAY

## LEHIGH VALLEY MOUNTAIN TYPE 3 CYLINDER LOCOMOTIVE



This locomotive continues in matchless fashion to ratify its endorsement by Lehigh Valley officials, as evidenced by their second order for five more of the same type and class, recently received.

The 5000 alternates daily on milk trains Nos. 21 and 38, between Lehighton and Sayre, a distance of 150 miles, which is an unusually severe and exacting assignment.

The continuity of its performance at a greatly reduced cost over former methods of handling these trains, indicates unmistakably that not only the basic factors of strength, utility and economy are embodied in this locomotive to a marked degree, but in a very practical way is proving that in developing the 3 cylinder principle Alco Engineers have forged a new link in the chain of transportation progress.

**AMERICAN LOCOMOTIVE COMPANY**  
30 Church Street New York City



*Get The  
Benefit  
of  
BARCO  
Connections  
This Winter*



**T**HERE is time even yet to apply Barco Steam Heat Connections to your cars this season.

You can still receive the benefit during the present Winter, of Steam Heat Equipment that does not burst or fail even when subjected to full boiler pressures—if you send in your orders at once for Barco All

Metal Steam Heat Connections.

Decide right now to banish steam heat connection troubles from your road, not only this Winter but for many years to come, by immediately equipping your cars and locomotive tenders with Barco All Metal Steam Heat Connections. They are interchangeable with hose and are quickly applied.

*Wire in your orders today for immediate delivery.*

**Barco Manufacturing Company**

1801 Winnemac Avenue, Chicago, Ill.

In Canada  
Montreal-Toronto

THE HOLDEN CO., LTD.

In Canada  
Winnipeg-Vancouver

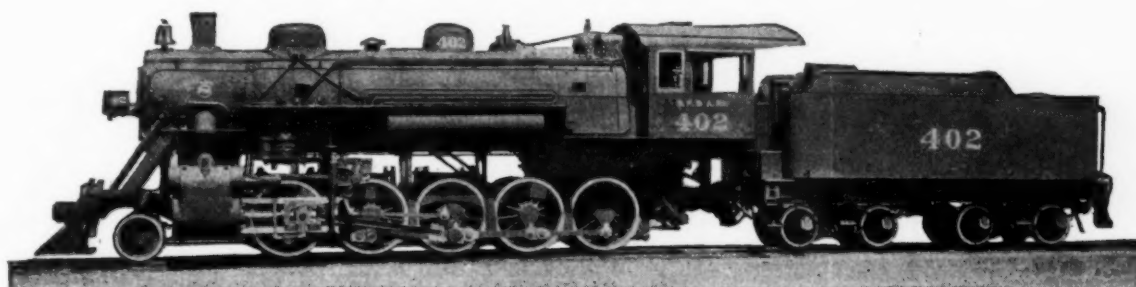
**Barco Steam Heat Connections**



# BALDWIN

## Decapod Type Locomotives For Heavy Freight Service on 60-Pound Rails

IN 1923 we built two locomotives of the Decapod (2-10-0) type for the Georgia, Florida and Alabama Railway, whose main line extends from Richland, Ga., to Carrabelle, Fla., a distance of 183 miles. These locomotives proved so successful that two duplicates, one of which is illustrated, were subsequently ordered.



DECAPOD TYPE LOCOMOTIVE, GEORGIA, FLORIDA & ALABAMA RAILWAY

Cylinders, 24" x 28"  
Driving wheels, diameter, 56"  
Steam pressure, 190 lb.  
Grate area, 54.3 sq. ft.

Water heating surface, 2,343 sq. ft.  
Superheating surface, 553 sq. ft.  
Weight on drivers, 190,000 lb.  
Weight, total engine, 212,000 lb.

Tractive force, 46,510 lb.

The requirements of the Georgia, Florida & Alabama called for a locomotive for heavy freight service to operate on 60-pound rails, and the Decapod type was selected as the most suitable for meeting these conditions.

These locomotives have an average load of 38,000 pounds per pair of

driving wheels, while the ratio of adhesion is 4.1, and approximately 90 per cent of the total locomotive weight is carried on drivers. These proportions, combined with ample steaming capacity, fit this design especially for heavy drag service. The equipment includes a superheater, arch, and power reverse gear.

The Decapod type merits careful consideration for freight service on lines where wheel loads are limited by track and bridge conditions.

THE BALDWIN LOCOMOTIVE WORKS  
PHILADELPHIA

# LOCOMOTIVES

# WABCO Gaskets

are made in the  
"HOME OF THE AIR BRAKE"

The gaskets which are now being furnished by the Westinghouse Air Brake Company are made in our own plant.

They are the result, first, of long experience which has taught us what qualities a gasket should have, and, second, the manufacturing methods evolved by careful research and experiment.

These gaskets are made of the familiar WABCO material with beads perfected in design and location, to insure the tightest and most enduring seal at vital points in air brake apparatus.

Each particular type of gasket is made suitable for its specific purpose by varying the material and its treatment to obtain the right degree of hardness, resiliency, and durability. This is possible because the process is exclusively our own and can be controlled at will.

By using WABCO Gaskets exclusively, you are assured of uniform lasting qualities in any particular type of gasket and that this type will be exactly suited to its purpose.



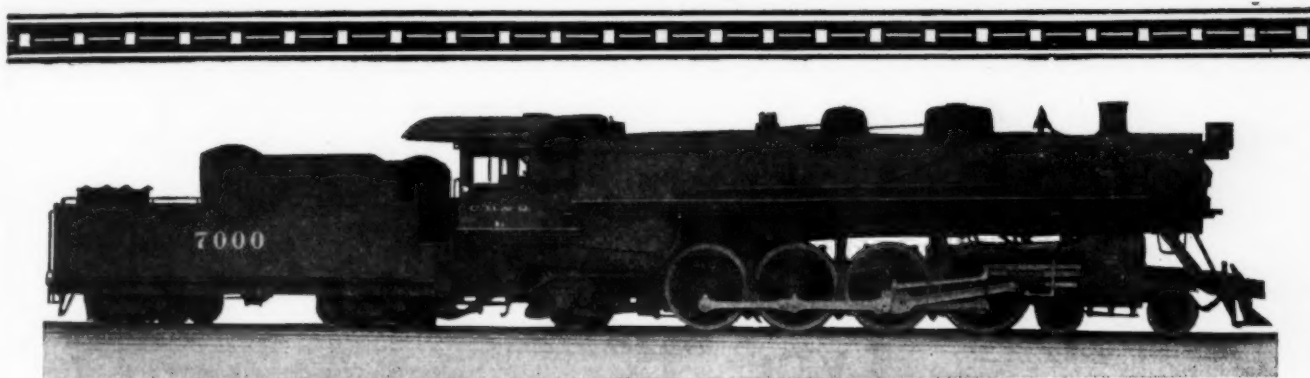
✕ WABCO ✕



**WESTINGHOUSE AIR BRAKE Co.**

General Office and Works, Wilmerding, Pa.

New York Washington Pittsburgh Chicago St. Louis San Francisco



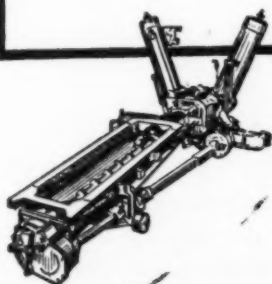
## The General Manager says—



**7134 of our Stokers  
now in Service.**

**6003 of them are  
Duplexes.**

**—“Because the  
Promise has been  
Performed”**



The present day demand is for transportation service on reduced time schedules, minimum terminal movement, —

We can increase the available motive power by running engines longer distances, that is, run them over two or more divisions on through passenger and freight trains. We are beyond the experimental stage in this effort and some roads have been successful in increasing the number of locomotives available for a given service, by 15 to 25 per cent. —

Our experience with larger locomotives equipped with stokers, modern grates and feed water heaters has been very satisfactory and has enabled us to increase materially the distance engines will run without having fires cleaned or being conditioned. Mechanical stokers have increased the capacity so that an increased number of cars can be handled in heavy passenger service and more tons per train in freight service than could be handled with the same class of engine hand fired. We can also use an inferior grade of coal to advantage. The improvement in performance has been most pronounced in lignite coal territory as the capacity of the engine has heretofore been limited by the possible physical effort of the fireman to supply the firebox. We think also it saves flue maintenance, in that the engine can be fired without the heavy top draft that hand-fired engines are subjected to when the fireman opens the firebox door.

locomotive  
mechanical  
been reduced  
in the  
To make  
modern  
qualified  
tunity  
mechanical  
the main  
can be done  
This  
tives  
be had  
of power  
master  
of locomotive  
to assist  
from  
it work

This was said at a recent Railway Club meeting in a paper on “The Business of Moving Trains at a Profit”, read by the General Manager of a railroad which has in service 138 STREET STOKERS and 137 DUPLEX STOKERS.

*79 other roads are realizing similar benefits*

## LOCOMOTIVE STOKER CO.

**Main Office and Works—30 General Robinson St., West,  
Northside, PITTSBURGH, PA.**

Westinghouse Bldg.  
150 Broadway  
NEW YORK

Munsey Bldg.  
1329 “E” St., N. W.  
WASHINGTON

Railway Exchange Bldg.  
80 E. Jackson Blvd.  
CHICAGO





## Type "B" Speaks For Itself

"I am the successor of various types of chewers and puffers of coal. When I started my career, I felt sure I was down to my lowest fighting weight, fit and ready to feed the hungriest of fires.

"Unbeknown to myself, I was under steady observation—not only of my master whom I was serving, but especially my creator—Mr. Designer, who criticized my work most severely.

"It's true, at the beginning, I occasionally got tired, and once in a while, I fell down in the performance of my duty. In fact, I had to call on Mr. Fireman more than once to help me out. I did not think this to be a serious offense, as I found my mates of a different species doing the same thing, and this in spite of superior weight and higher compensation. But this did not satisfy my backers, who decided I ought to go into further training, and at the same time appointed a new Coach.

"All of a sudden I was ordered on the operating table. When I came to, some 161 parts were cut out of me, leaving only 219 with which to do the work. Jumping on a scale I found I had lost 650 lbs. in weight.

"In due time I was put to work again. To my surprise everything seemed to go easier, and today I would like to see the locomotive I could not handle for 500 miles at a clip, whatever its appetite.

"Strange to say, with the shedding of the surplus weight, I don't seem to need so much to sustain me, and the work comes easier. All I want today is a chance to show what I can do and I am sure I will sign up for life. My engagement fee is modest, my board the minimum and no vacations.

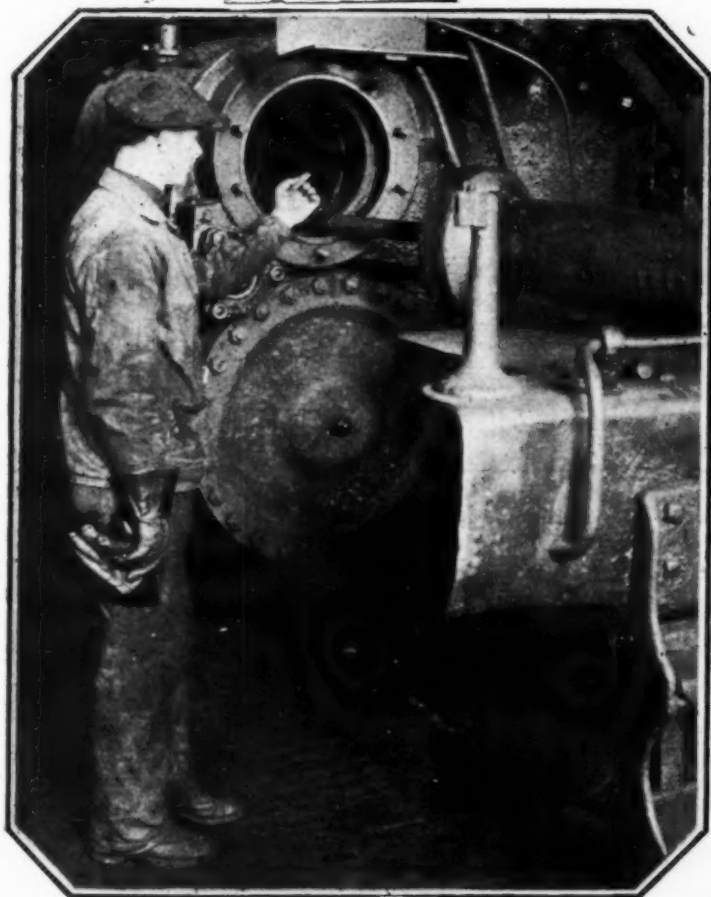
"There are lots of things I would like to say about myself, but my native modesty forbids".

**ASK—STANDARD STOKER COMPANY, INC.**

Grand Central Terminal  
New York City



# For Greater Service From Your Locomotives



## Steam Distribution Must be Closely Watched

Cyl. and Valve  
Packing Rings

Cyl. and Valve  
Bushings

Cyl. and Valve  
Bull Rings

Crosshead  
Shoes

Shoes and  
Wedges

Knuckle Pin  
Bushings

Eccentrics—  
Straps

Air Pump  
Packing Rings

Floating Side-  
Rod Bushings

THE steadily increasing cost of fuel decrees that valves and pistons must be kept steam tight. To keep locomotive repair costs from becoming prohibitive, frequent renewal of packing rings and bushings must be prevented.

Economical operation demands greater service from these parts—The quality of materials specified then becomes an almighty important factor.

To obtain most efficient steam distribution through the valves and cylinders, 80% of the leading railroads specify Hunt-Spiller Gun Iron for wearing parts. They find it pays—Is your road on the list?

**HUNT-SPILLER MFG. CORPORATION**  
W. B. Leach, Pres. & Gen. Mgr. J. G. Platt, Vice-Pres. & Sales Mgr.

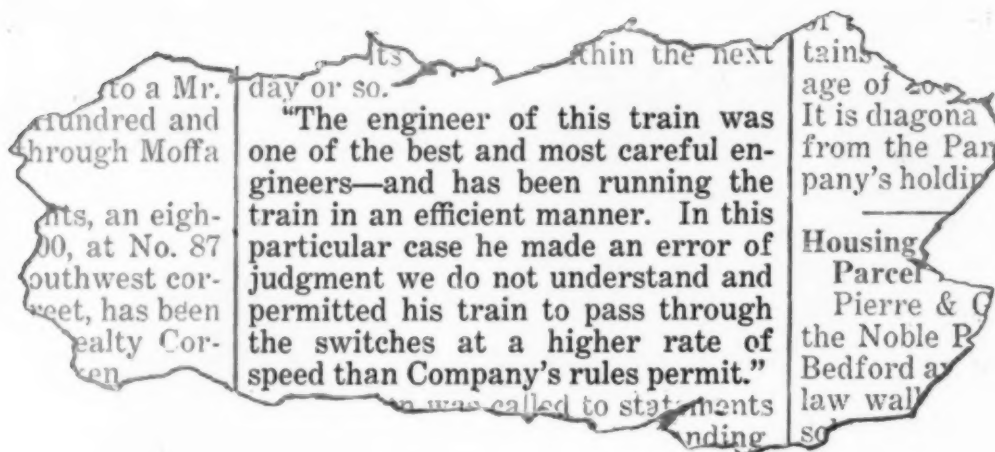
383 Dorchester Ave.

Office & Works

South Boston, 27, Mass.

# HUNT-SPILLER

## Gun Iron



THE above, quoted from a New York newspaper, is the statement of an executive officer of the railroad.

Errors of judgment as to speed are impossible with the LOCO-RECORDER. A dial in full view of the engineman shows at a glance instantly the exact speed of the train.

In addition to the dial indication a record is made simultaneously which permanently records speeds, acceleration, deceleration, duration of stops and point on the road where each occurred. This record is available for reference at any time.

LOCO-RECORDERS prevent accidents due to excessive speed by making speed restrictions easy to obey.



LOCO-RECORDER  
Cover removed showing  
recording tape.

A dial in full view of  
the engineman shows  
exact train speed.

## DISTANCE-SPEED RECORDING CO.

14 WALL STREET, NEW YORK CITY

McCormick Bldg., Chicago

# LOCO-RECORDER

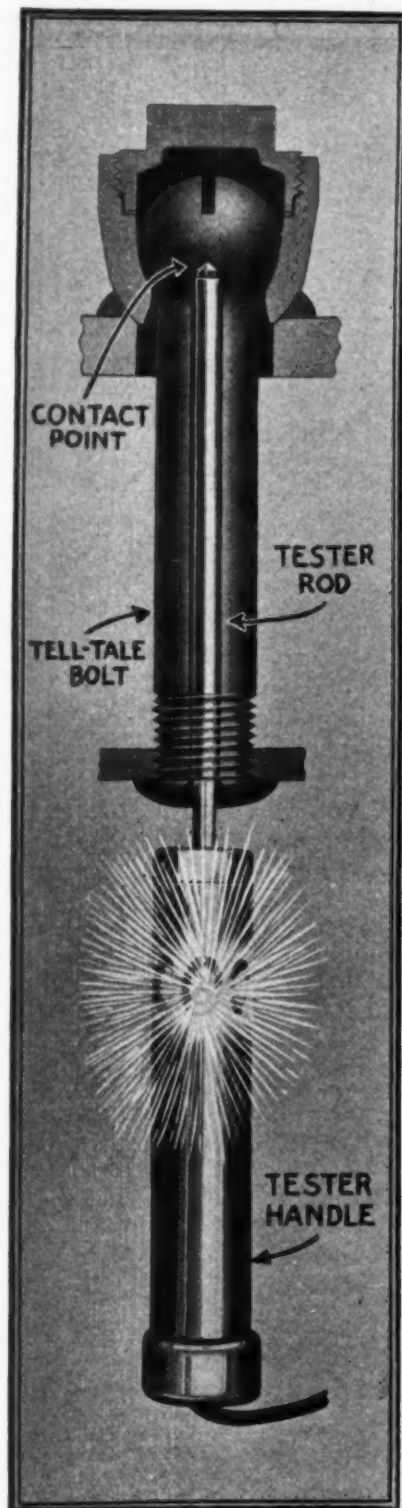


# THE FLANNERY TESTER

## how it works

A broken staybolt having a tell-tale hole, will show leakage of water and steam, **provided**, the hole be clean and extends to every portion of the bolt subject to breakage.

Therefore, to make certain that leakage takes place when a flexible staybolt breaks, the Flannery Bolt Company developed —



First. A bolt with a tell-tale hole extending through every portion of the bolt subject to breakage, the walls of the hole being coated or plated to prevent rust or corrosion due to sweating.

Fireproof porous cement is used to close the tell-tale hole at the riveted end of the bolt, thus permitting leakage of water and steam in case of bolt breakage, but preventing entrance of any foreign matter from the firebox.

Therefore, by its construction, the Tell-Tale Bolt is **at all times self indicating** (by leakage) when breakage occurs.

Second. A Tester, used **periodically**, to determine whether the tell-tale hole of such a bolt is clean or stopped up.

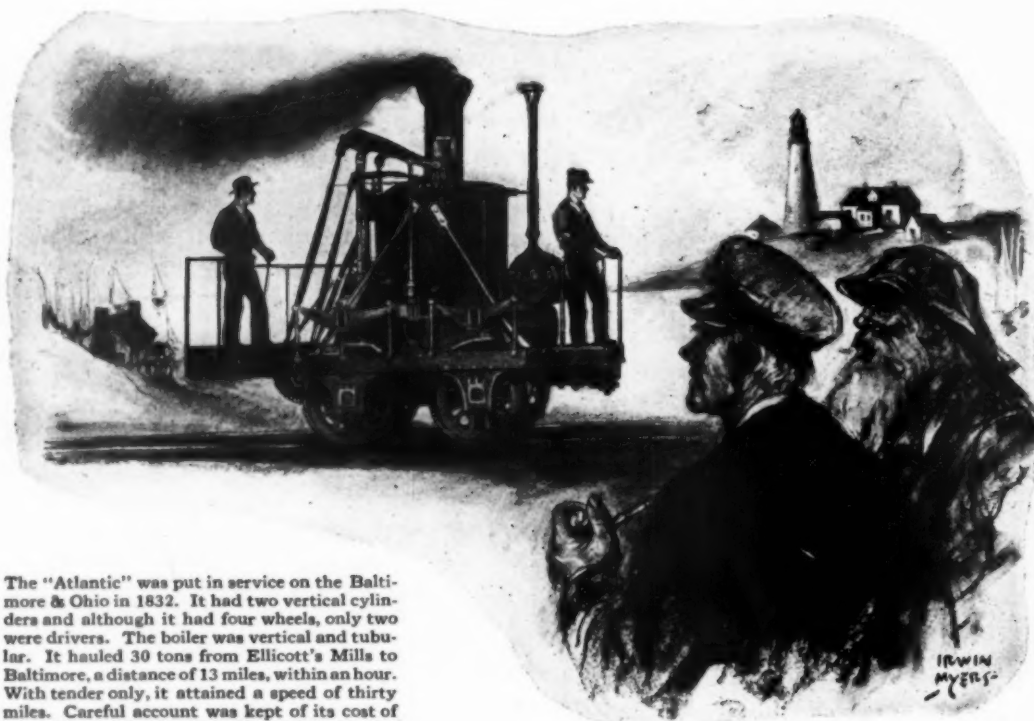
As shown in the illustration, a clean tell-tale hole will permit the point of the Tester rod to come into contact with the end of the tell-tale hole. Such contact is indicated by the flashing of an electric light in the Tester handle.

A clogged tell-tale hole will stop the point of the Tester rod from coming into contact with the end of the tell-tale hole, situated in the head of the bolt. The failure of the electric light bulb to flash will prove this clogged condition. Such a bolt must be cleaned with a small drill. For this purpose we furnish a special drill which performs the work efficiently and economically. The Tester rod is again inserted in the tell-tale hole, **as the electric flash signal must be obtained in every bolt.**

If any broken bolts are present, such will be indicated by leakage of water from the bolt ends, when the boiler is put under pressure.

# FLANNERY BOLT CO.

FLANNERY BLDG. . . . . 3528 FORBES ST.,  
PITTSBURGH, PA.



The "Atlantic" was put in service on the Baltimore & Ohio in 1832. It had two vertical cylinders and although it had four wheels, only two were drivers. The boiler was vertical and tubular. It hauled 30 tons from Ellicott's Mills to Baltimore, a distance of 13 miles, within an hour. With tender only, it attained a speed of thirty miles. Careful account was kept of its cost of operation and it was found its daily labor involved an expense of \$16, while the same results accomplished with animal power amounted to \$33. The "Atlantic" weighed 5½ tons.

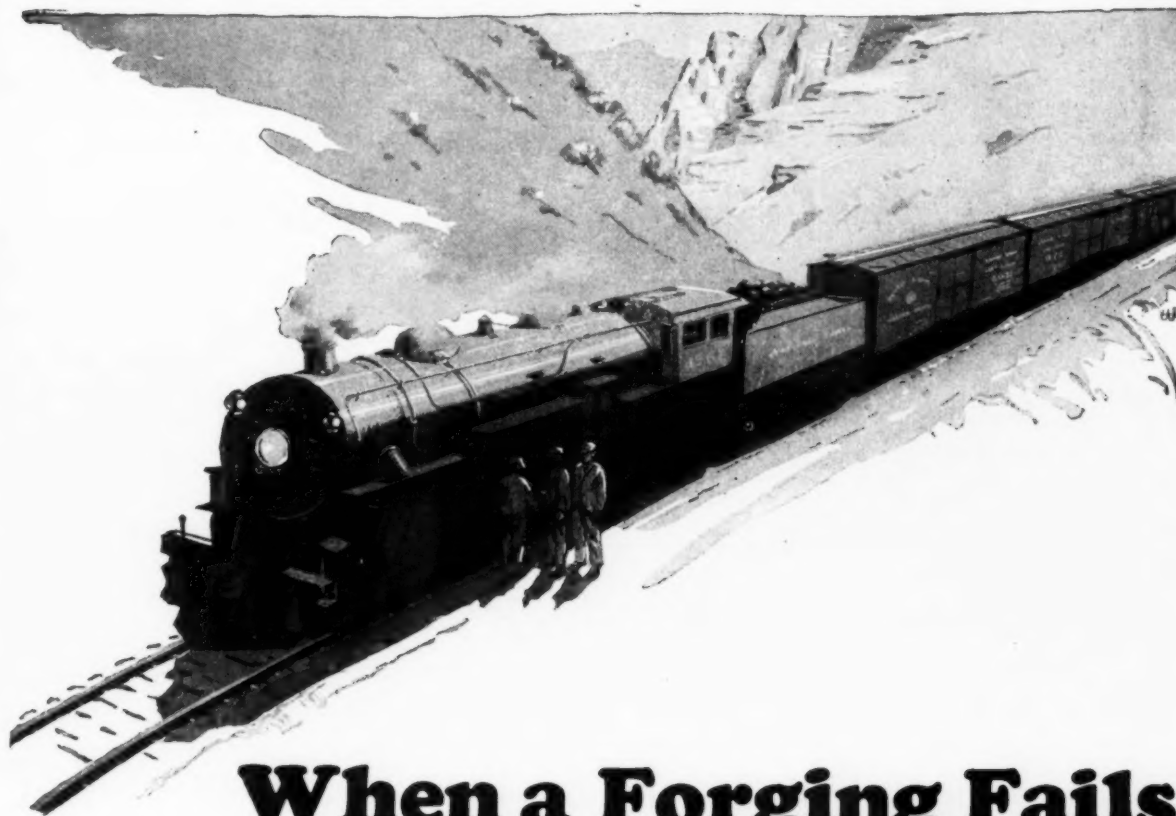
**C**RUDE as those early locomotives were, costs of operation were already becoming a factor. Today, operating costs are infinitely more vital. One sure way to reduce those costs is to reduce repair expenses. And one sure way to reduce those expenses is by the use of Agathon Alloy Steels for the highly stressed and wearing parts of locomotives. We have a valuable handbook containing many charts and tables and describing the physical properties of various analyses of Agathon Alloy Steels. This book, also the services of our staff of expert metallurgists, are yours for the asking.



THE CENTRAL STEEL COMPANY, Massillon, Ohio

# AGATHON ALLOY STEELS

NOTE: This is the 15th of a series of ads depicting the development of the Locomotive. Watch for future ads.



## When a Forging Fails

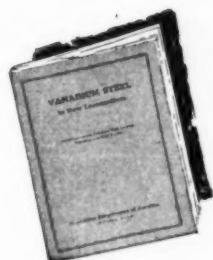
**S**MALLEST in the items of damage is the cost of the forging. Think of the disruption of schedules, the damage to the locomotive and the out-of-service time.

Consider the replacement forging, too. Will it be a duplicate of the failed part? Or will you increase the section and weight of the forging in an effort to secure greater strength?

More logical and better would it be to replace the failed part with one of Carbon-Vanadium, the ideal forging steel.

Fifty per cent higher in useful strength than carbon steel are Carbon-Vanadium Forgings. In resistance to shock and fatigue, too, Carbon-Vanadium Forgings rate correspondingly higher.

Why not investigate Carbon-Vanadium Steel for your new and replacement forgings? Send for forging data.



Send for a copy of "Vanadium Steel in New Locomotives", containing illustrations of 58 locomotives. These locomotives, built for 33 roads, represent orders totaling 1028 locomotives equipped with Carbon-Vanadium Forgings or Vanadium Steel Frames.

### VANADIUM CORPORATION OF AMERICA

NEW YORK  
120 Broadway

DETROIT  
Book Bldg.

# VANADIUM STEELS

*for Strength, Toughness and Durability*



## Above-Board Circulation

**P**ROGRESSIVE publications belonging to the Audit Bureau of Circulations have adopted an open and "Above-Board" circulation policy. They lay before advertisers circulation facts that have been verified by experienced auditors.

Advertisers, before the advent of the A. B. C., were forced to depend upon hearsay circulation information and unverified "sworn statements" of circulation. No detailed figures were available and no verification was possible except at great expense to the advertiser.

Nowadays advertisers look to the A. B. C. for dependable, unbiased circulation information and select their advertising mediums accordingly.

*Today practically all the leading publications of the United States and Canada are members of the A. B. C. It should not be long before every publication goes on record with A. B. C. membership.*

This will make it possible for every advertiser to use detailed circulation facts, covering the entire publishing field. This will permit a fair comparison and eliminate guesswork from the purchase of space.

*Railway Age, and all Simmons-Boardman Publications are members of The Audit Bureau of Circulations.*

**INVEST YOUR ADVERTISING DOLLARS BY USING A. B. C. PAPERS**

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# MORGAN

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ERECTING ROOM IN LOCOMOTIVE SHOP 95' 0" x 900' 0"

Showing 58 locomotives stripped and in process of repair. Have had as high as 72 locomotives stripped in this building at one time.

## Have You Locomotives "Waiting For Repairs"

Why not take advantage of our service, and clean out those long lines of idle locomotives "waiting for repairs."

Ten of the leading roads have already taken advantage of our facilities, and we are rapidly turning their idle locomotives into money earning service.

We have the finest equipped shop in the country for repairing and rebuilding heavy railway locomotives of all types and sizes.

Our present capacity is nine locomotives per week, which is being increased. Can we interest you in our service?

### The Morgan Engineering Co. Alliance, Ohio

Chicago  
122 So. Michigan Ave.

Designers, Manufacturers and Contractors  
Electric Traveling Cranes, Rolling Mill Machinery  
Ordnance, Steel, Shipbuilding and Forging Plants Complete  
Rock Crushers, Special Machinery for Any Purpose

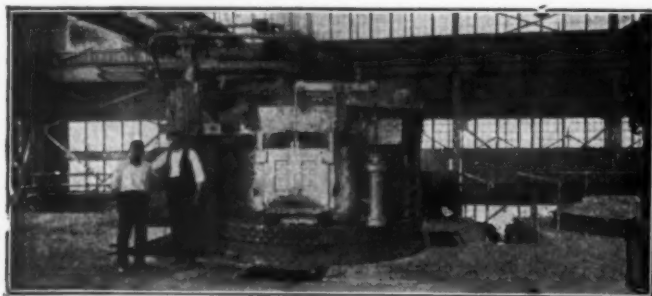
New York  
120 Broadway  
Pittsburgh  
1420 Oliver Bldg.

# AMERICAN BRIDGE COMPANY

71 Broadway, New York

*Manufacturers of Steel Structures of all classes, particularly*

## BRIDGES *and* BUILDINGS



HEROULT ELECTRIC FURNACE

*We also furnish and install*

**HEROULT ELECTRIC FURNACES of ONE, TWO, THREE, SEVEN, TEN, FIFTEEN and FORTY GROSS TON CAPACITIES**

OFFICES IN PRINCIPAL CITIES

**E**

## TIRES AND

## WHEELS



This Locomotive Is Equipped with Tires and Wheels Throughout by

**EDGEWATER STEEL CO.**

Pittsburgh, Pa.

### SALES OFFICES

Atlanta, Ga. ....Candler Bldg.  
Baltimore, Md. ....Mansey Bldg.  
Boston, Mass. ....53 Oliver Bldg.  
Chicago, Ill. ....Peoples Gas Bldg.  
Los Angeles, Cal. ....Title Insurance Bldg.  
Louisville, Ky. ....Starks Bldg.

New York, N. Y. ....Grand Central Terminal  
Philadelphia, Pa. ....Finance Bldg.  
Portland, Ore. ....609 Upshur St.

Salt Lake City, Utah. ....Kearns Bldg.  
San Francisco, Cal. ....489 Bryant St.  
St. Louis, Mo. ....Railway Exchange Bldg.  
St. Paul, Minn. ....Merchants Bank Bldg.  
Seattle, Wash. ....910 First Ave. South  
Washington, D. C. ....Mansey Bldg.

**E**

**E**





*Your  
Problem  
Is Easy—*  
**CREOSOTED**

**Ties—Poles  
Timbers  
Cross Arms  
Piling**

**Creosote Oil**  
**Tank Cars or by Cargo**

**WRITE US**

**American Creosote Works, Inc.**  
*New Orleans, La.*

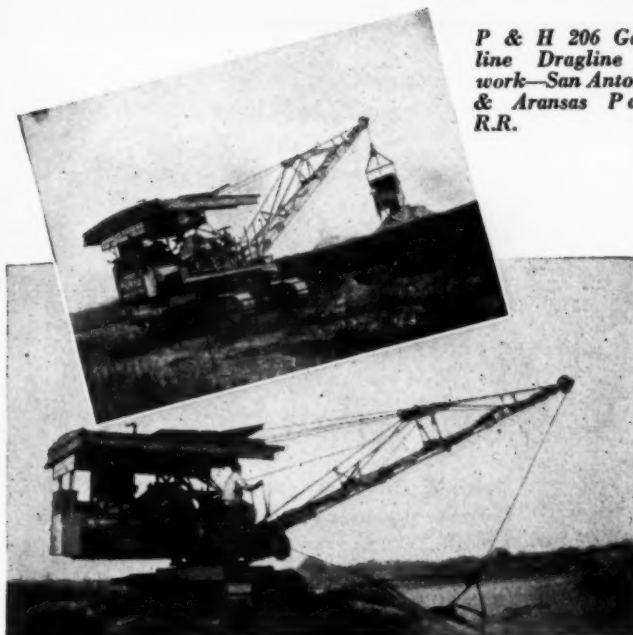
**Savannah Creosoting Co. Inc.**  
*Savannah, Ga.*

Combined Capacity of Plants  
150,000,000 Ft. B. M. Annually

**PLANTS**

New Orleans, La.  
Winnfield, La.

Louisville, Miss.  
Savannah, Ga.



*P & H 206 Gasoline Dragline at work—San Antonio & Aransas Pass R.R.*

**Easy Handling Speeds up  
Excavation Work**

Bucket after bucket—loaded to capacity is swished through the air—spotted over the cars and dumped.

**Low Cable Expense**

In the design of the P & H Dragline, the fair lead is mounted on the machine—not on the boom, and because of the long lead between drums and the fair lead the cable has extraordinary long life. The drums are mounted on independent shafts, insuring center pull on the ropes.

The quality of the design and construction throughout results in lower maintenance costs, economy of fuel and oil and a machine that withstands long sieges of hard usage.

Bulletin 59-X gives further details and shows scores of interesting operating views. If you haven't a copy—let us mail you one now.

*Excavating Machinery Division*

**HARNISCHFEGER CORP.**

3829 National Ave.—Milwaukee, Wis.

New York	Chicago	Pittsburgh	Philadelphia
San Francisco	Portland	Seattle	Los Angeles
Detroit	Memphis	Dallas	Atlanta
		Kansas City	

**Warehouses and Service Stations:**

New York, Memphis, San Francisco



**DRAGLINES**



## Behind the Long-Bell Trade-Mark

1. Behind this trade-mark is one of the largest lumber manufacturers in the world.
2. Behind this trade-mark is an organization with 49 years' experience in the lumber industry.
3. Behind this trade-mark is a high standard of thoroughness in manufacturing.
4. Behind this trade-mark is a wide selection of lumber products manufactured from the four most useful building woods—Douglas Fir, Southern Pine, California White Pine and Southern Oak.
5. Behind this trade-mark you can know the lumber you buy.

### THE LONG-BELL LUMBER COMPANY

R. A. LONG BLDG.

Lumbermen Since 1875

KANSAS CITY, MO.

Douglas Fir Lumber and Timbers; Southern Pine Lumber and Timbers; Creosoted Lumber, Timbers, Posts, Poles, Ties, Guard-Rail Posts, Piling; Southern Hardwood Lumber and Timbers; California White Pine Lumber; Sash and Doors; Oak Flooring.

## CIDOL ROACH POWDER

**Kills Roaches and Waterbugs**

**Never Fails  
Sure in Action  
Positive in Results**

***A Guaranteed West product  
Money back if it Fails***

**WEST DISINFECTING CO.**

RAILROAD DEPARTMENT

RAILWAY EXCHANGE BLDG.

CHICAGO

### All Conditions Met

Dearborn Methods are adjusted to meet every operating condition. Our Chemical and Service Departments will gladly co-operate in working out for you the most effective formula of treatment and method of application.

The prestige gained by Dearborn successes throughout 37 years in business is maintained by keeping Dearborn Service constantly up to the highest possible standard.

Let us co-operate with you in solving your water problems.

**Dearborn**

**DEARBORN CHEMICAL  
COMPANY**

310 South Michigan Avenue, Chicago  
290 Broadway, New York

## A. R. A. Standard "D" Couplers

Pitt Couplers  
Penn Couplers  
for Cars and Locomotives

## Pitt Pivoted and "D" Couplers

designed especially for  
Passenger Train Cars

**The McConway & Torley Company**

48th St. & A. V. Ry., Arsenal Station  
Pittsburgh, Pa.

Shaw Electric Traveling Cranes  
Putnam Machine Tools  
Ashcroft Gauges  
Consolidated Safety Valves  
Hancock Inspirators and Valves  
Metropolitan Injectors

Manufactured by

**Manning, Maxwell  
& Moore, Inc.**



### 3-M SERVICE

A broad, comprehensive service covering many fields of Industry has made the 3-M trade mark known throughout the mechanical world. In addition to the manufactured products specified above the 3-M Service includes the distribution of Railway, Mill, Machinist and Contractor's Supplies, and also a complete line of Machine Tools of other makes.

To demonstrate the practical advantage of 3-M Service we await an indication of your interest in some product or group of products which we make or market.

**100 East 42nd Street, New York**

Branch Offices:

Atlanta  
Boston  
Buffalo  
Chicago

Cleveland  
Detroit  
Philadelphia  
Pittsburgh

San Francisco  
Seattle  
St. Louis  
Syracuse

Original and Genuine



**AMERICAN**  
Railroad  
Right-of-Way **FENCE**

AND

**ARROW**  
T-STEEL  
R. R. RAIL  
SECTION **POSTS**

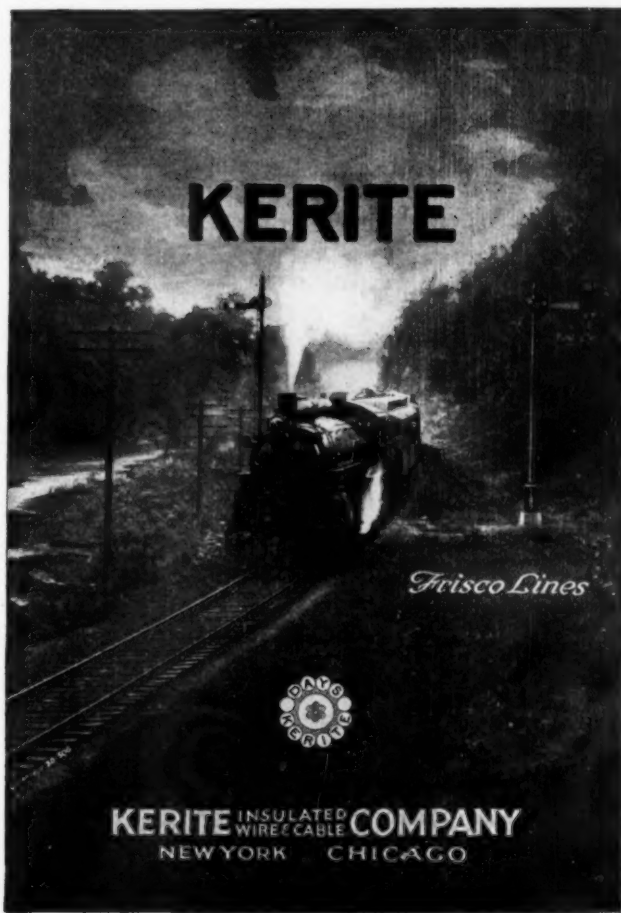
Built Like a Railroad Rail

For absolute  
Right-of-Way  
Protection

Send for descriptive literature

**American Steel & Wire Co.**  
CHICAGO NEW YORK

**KERITE**



*Frisco Lines*



**KERITE INSULATED WIRE & CABLE COMPANY**  
NEW YORK CHICAGO



## Men Who Know Do Better Work— Draw Better Pay



This book will help you do better work—fit you for better pay. It contains the latest amendments and rulings on the Standard Safety Appliances for all classes of Cars and Locomotives. It is profusely illustrated with full page drawings—shows the correct legal application with the law preceding each drawing.

### Approved by M. C. B. Association

It has been approved by The Master Car Builders' Association and should be in the hands of every Superintendent of Motive Power, Master Mechanic, Car Foreman, Inspector and Repairman.

Bound in Leather, \$2 per copy  
Bound in heavy cover paper, reinforced with cloth, \$1  
Quantity prices to Railroads

**GIBSON-PRIBBLE & CO., Publishers**

Send Orders to Garrett & Massie, Inc., Selling Agents  
1309-11 E. Franklin St., Richmond, Virginia, U. S. A.

## What's your trouble?

**W**HAT happens to be your trouble in steel? Not that Interstate is the answer to every difficulty — but Interstate would surely be pleased to discuss yours with you — frankly.

INTERSTATE IRON & STEEL CO.  
104 South Michigan Avenue  
CHICAGO

## Interstate Steels

Open Hearth Alloy Steel Ingots, Billets, Bars  
Wire Rods, Wire, Nails, Rivets and Cut Tacks  
Iron Bars and Railroad Tie Plates

### District Offices:

NEW YORK—82 Vanderbilt Ave.  
DETROIT—Washington Boulevard Bldg.  
MILWAUKEE—First Wisconsin National Bank Bldg.  
CLEVELAND—Union Trust Bldg.  
ST. PAUL—Merchants National Bank Bldg.  
ST. LOUIS—International Life Bldg.  
SAN FRANCISCO—Monadnock Bldg.  
KANSAS CITY—Reliance Bldg.

## Murray Cast Steel Friction Draft Gear



### and Cast Steel Coupler Yokes

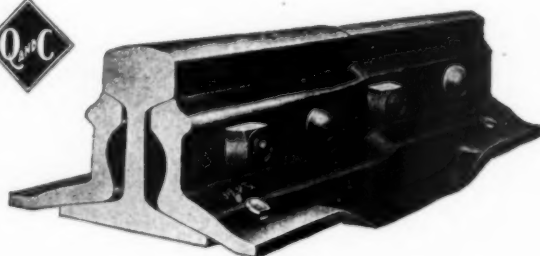
Giving the  
Best of Service  
on Thousands  
of Cars



**KEYOKE RAILWAY EQUIPMENT CO.**

Monadnock Bldg.

Chicago, Ill.



## Q & C Rolled Steel Step Joint

THE JOINT AS STRONG AS THE RAIL

**H**ERE is a high carbon rolled steel step joint, amply reinforced at head and base, heat treated when specified—one that will practically overcome low joints.

We can furnish a joint for practically any combination of tee rails, and also allow for wear on worn rail heads when specified, thus guaranteeing the best possible fit.

Specify them in your requirements.

BLUEPRINTS AND PRICES ON REQUEST

**The Q & C Company**  
90 West St., NEW YORK

CHICAGO

SAN FRANCISCO

ST. LOUIS

## LET US REDUCE THAT BOILER SCALE

Scale in locomotive boilers is a great waster of fuel and a great destroyer of boiler metal.

Scaled up boilers can be cleaned in service, and maintained in a reasonably clean condition by the

use of Polarized Mercury Anti-scaling Chemicals, or by other combinations of chemicals, as furnished by The Bird-Archer Company, in solid forms, convenient to use, and easy to handle.

### THE BIRD-ARCHER COMPANY

NEW YORK

CHICAGO

ST. LOUIS

MONTREAL



## To Insure GREATER SAFETY Specify DAVIS SOLID TRUSS BRAKE BEAMS



FORGED TRUSS eliminates threaded rod ends and nuts—the weak points in most beams.

Same Head Fits Either End.

DAVIS BRAKE BEAM CO.  
Johnstown, Pa.

SALES OFFICES: 1602 Oliver Bldg., Pittsburgh, Pa.  
1313 Peoples Gas Bldg., Chicago

1st Nat'l Bank Bldg., Roanoke, Va.  
494 Arcade Bldg., St. Louis

## Specify BUCKEYE JACKS

and be assured that you are getting the best jacks in design, capacity and longevity that are manufactured for all Railroad purposes

Send for Catalogue



BUCKEYE JACK MFG. CO., Alliance, Ohio

### THE BUCKEYE STEEL CASTINGS CO.

COLUMBUS, O.



SIDE FRAMES  
BOLSTERS  
COUPLERS  
AND YOKES



SALES OFFICES  
NEW YORK, CHICAGO, ST. PAUL, LOUISVILLE,  
AND COLUMBUS

Foreign Agents: DAVIS & LLOYD, LONDON

### Hattiesburg Creosoting Company

PLANTS AT HATTIESBURG, MISS., &amp; SLIDELL, LA.

MAIN OFFICE—Hattiesburg, Miss.

## Creosoted Material

Including

Lumber, Timbers, Piles, Telephone and Telegraph Poles and Cross-Arms, Paving Blocks, Cross-Ties, Etc.

Capacity 70,000,000 feet B. M. per Annum  
Facilities for shipping by rail or water

## BARBER LATERAL-MOTION DEVICE 1,000,000 in service on 43 Railroads ROLLER SIDE-BEARINGS

Roller Center Plates  
Lessens Wheel Flange Wear  
Reduces Friction on Rails 15%

**STANDARD CAR TRUCK CO.**  
McCORMICK BUILDING CHICAGO

## Water-Tube Boilers Babcock & Wilcox—Stirling—Rust Steam Superheaters Chain-Grate Stokers Oil Burners

**THE BABCOCK & WILCOX CO.**  
85 Liberty St., New York

Branch offices at Atlanta, Boston, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Havana, Honolulu, Houston, Los Angeles, New Orleans, Philadelphia, Phoenix, Pittsburgh, Portland, Ore., Salt Lake City, San Francisco, San Juan, Seattle

## 1895 CHAMPION 1924 RIVET CO. "VICTOR"



### RIVETS

Boiler  
Ship  
Structural  
Tank



ON EVERY HEAD

### PINS

Coupler  
Brake  
and  
Special

STEEL RIVETS ALL STYLES FROM 1/4" UPWARD  
5TH EDITION "SCIENTIFIC FACTS" ON REQUEST

MAIN OFFICES  
AND WORKS  
CLEVELAND, OHIO.

WESTERN  
PLANT  
EAST CHICAGO, IND.

Quality

Workmanship

Service

## CAR HEATING Vapor Car Heating Co., Inc.

80 E. JACKSON B'VD.

### CHICAGO

NEW YORK, 30 Church St. PHILADELPHIA, Commer-  
BOSTON, 53 State St. cial Trust Bldg.  
ST. PAUL, Merchant Nat. SAN FRANCISCO, Hobart  
Bank Bldg. Bldg.  
WASHINGTON, D. C., Mun- MONTREAL, CANADA, 65  
sey Bldg. Dalhousie St.

For detailed description see Car Builders' Cyclopedia, 1922 Edition



## ANNOUNCEMENT

Our DIAMOND PERFECTO and IMPROVED PERFECTO types of Reinforced DRIVER BRAKE SHOES and DIAMOND "S" types of reinforced ENGINE TRUCK, TENDER and CAR BRAKE SHOES are manufactured and sold under U. S. letters patent and registered trade marks.

**American Brake Shoe & Foundry Co.**  
30 Church St. 332 So. Michigan Ave.  
New York Chicago

## SPECIALISTS IN THE Design and Manufacture OF Standard-Insulated-Compromise Rail Joints

**THE RAIL JOINT COMPANY**  
61 Broadway, New York City

## O. S. DEPENDABLE Pile Drivers

Designed and manufactured to meet any requirements for the economical handling and driving of piles. Self-propelled collapsible leads.

**ORTON & STEINBRENNER CO.**



Main Offices  
Chicago, Ill.

Factory  
Huntington,  
Ind.



American Bessemer, American Open Hearth and  
KEYSTONE COPPER STEEL  
Black and Galvanized

# SHEETS

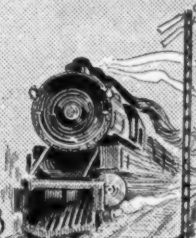
We manufacture SHEET AND TIN MILL PRODUCTS for all purposes—Black Sheets, Galvanized Sheets, Corrugated Sheets, Culvert and Flume Stock, Formed Roofing and Siding Products, Special Sheets for Stamping, Stove and Range Sheets, Automobile Sheets in all grades, Electrical Sheets, Roofing Terne Plates, Bright Tin Plate, Etc.

AMERICAN SHEET AND TIN PLATE COMPANY, Pittsburgh, Pa.

Send for weight cards and booklets. Watch for large display ads.

# 'CARNEGIE'

for  
WHEELS  
AXLES  
RAILS  
RAIL JOINTS



Carnegie Steel Company  
PITTSBURGH, PENNA.

# INDUSTRIAL LOCOMOTIVE CRANES

17 Types—Capacities 5 to 200 Tons

INDUSTRIAL WORKS  
BAY CITY MICHIGAN

## Golden Glow Headlights

A complete line of electrical materials for railroads. See our full page ad in first issue of month.



ELECTRIC SERVICE SUPPLIES CO.  
Philadelphia, New York, Chicago

FORT PITT SPRING & MFG. CO.  
Pittsburgh, Pa.

We make SPRINGS for every need in railway service.

Workmanship and materials of the highest Standard.



# Protect Your Cars

with

## CARDWELL FRICTION DRAFT GEARS

UNION DRAFT GEAR COMPANY  
332 S. MICHIGAN AVE. CHICAGO—TRANSPORTATION BLDG. MONTREAL

## RAIL ANTI-CREEPERS

CHICAGO

# THE P. & M. CO.

NEW YORK

Montreal

London

Paris

Calcutta

Sydney

WRIGLEY BUILDING  
CHICAGO

# STEEL BACK BRAKE SHOES

SINGER BUILDING  
NEW YORK

THE RAILWAY MATERIALS CO.



## CAR LIGHTING

"UNDER-FRAME" Electric

"PINTSCH" Gas

"PUTNAM" Storage Batteries

"SAFETY" Lighting Fixtures, Electric and Gas

THE SAFETY CAR HEATING AND LIGHTING CO.

NEW YORK CHICAGO PHILADELPHIA BOSTON ST. LOUIS SAN FRANCISCO MONTREAL

MANUFACTURED  
BY THE  
**SAFETY**  
CAR HEATING AND  
LIGHTING CO

## GREENVILLE STEEL CAR CO.

Manufacture Steel Underframes, Pressed Steel Shapes and Forgings  
Rebuild and Repair Steel Freight Cars

Greenville, Penn'a.

"AXLE SPECIALISTS  
SINCE 1866"

## CAR AXLES

J. R. JOHNSON AND CO., INC.

FORGED STEEL AXLES

FOR LOCOMOTIVES, PASSENGER, FREIGHT AND ELECTRIC CARS

SMOOTH FORGED OR ROUGH TURNED—CARBON OR ALLOY STEEL—PLAIN OR HEAT TREATED  
FORGED AND TURNED PISTON RODS, CRANK PINS, LARGE SHAFTS, ROUND BARS, ETC.

ADDRESS ALL MAIL TO  
POST OFFICE BOX 818,  
RICHMOND, VA.

## Are Your Brake Shoes Cutting Your Tires?

DO YOU KNOW WHY?

LET US TELL YOU

STANDARD BRAKE SHOE & FOUNDRY CO. PINE BLUFF ARKANSAS

## UNION SPRING & MANUFACTURING CO.

Coil Springs, Elliptic Springs, Steel Castings, Pressed Steel Spring Plates and Pressed Steel Journal Box Lids  
KENSINGTON JOURNAL BOX—All Steel

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Fisher Bldg., Chicago, Ill.  
Munsey Building, Baltimore, Md.

WORKS—NEW KENSINGTON, PA.

PITTSBURGH OFFICE—300 GRANITE BLDG.

For detailed descriptions see Car and Locomotive Cyclopedias, 1922 Editions

Todd Building, Louisville, Ky.  
Mutual Bldg., Richmond, Va.  
Crozier Building, Philadelphia, Pa.

## WALKER DRAFT GEAR CORP.

EDMUND H. WALKER, President

233 Broadway

New York

FRICTION DRAFT GEARS

## KREOLITE FLOORS



Kreolite  
Grooved Block

"Outlast the Factory"

An excellent investment for freight houses and platforms, engine houses, machine shops, etc.

Write to-day for our booklet—factory floors.

THE JENNISON-WRIGHT COMPANY

Crescenters—Cross Ties and Timbers  
65 Kreolite Bldg., Toledo, Ohio



BLACK BULL

Robert M. Lucas Co.

CREATORS and MAKERS of

LUCAS CEMENT

1955 West Thirty-First Street

Lafayette 0545

CHICAGO

"Through all changes some things endure"

JOURNAL  
BOX LIDS

For detailed description,  
see Car Builders' Cyclopedias  
1922 Edition

**ASCO**  
**PRESSED**  
**STEEL**

TRUCK  
SPRING  
PLATES

ALLEGHENY STEEL COMPANY

Brackenridge, Pa.

## ROLLED MANGANESE STEEL RAIL

Furnished  
in all  
standard  
sections



Effects great  
economy in  
maintenance  
on all curves  
for congested  
traffic

MANGANESE STEEL RAIL COMPANY  
Sales Office HILLBURN NEW YORK

## DUNER CAR CLOSETS

Enameled Iron Wet or Dry Closets

**DUNER CO.**

101 S. CLINTON STREET, CHICAGO

For detailed description, see Car Builders' Cyclopedias 1922 Edition



ANTI-FRICTION CAR SUPPORTING MEANS

**THE WOODS**

SIDE AND CENTER BEARINGS

**EDWIN S. WOODS & COMPANY**

Ill. Merchants Bk. Bldg. CHICAGO

**LIME BARIUM-CARBONATE  
WATER SOFTENERS**

NO SCALE

Engineers in Water Purification

NO FOAM

**REISERT**

AUTOMATIC WATER PURIFYING COMPANY

23 East 28th Street,

New York, N. Y.

**AMERICAN CREOSOTING COMPANY**COLONIAL  
CREOSOTING  
COMPANYGEORGIA  
CREOSOTING  
COMPANYPoles  
Timbers  
Cross  
Ties

LOUISVILLE ~ KENTUCKY

SALES OFFICES

830 MADISON AVE. NEW YORK CITY ~ 401 W. MAIN ST. LOUISVILLE, KY.

SOCALUS, ALA.

BRUNSWICK, GA.

Paving  
Piling  
Block  
LumberLong Leaf Yellow Pine Car Decking  
on hand for immediate shipment.**STEPHENS LUMBER COMPANY**

Jacksonville, Fla.

**Chicago Railway Equipment Co.****BRAKE BEAMS AND  
BRAKE BEAM SUPPORTS**

Chicago

**American Water Softener Company**

Fairhill P. O. Station, Philadelphia, Pa.

**SPECIALISTS FOR 20 YEARS IN  
RAILROAD WATER PURIFICATION****RAMAPO AJAX CORPORATION**Ajax Manganese  
Rail Braces  
RACOR  
Steel Guard Rails  
Clamps, Etc.Ramapo Automatic  
Safety Switch Stands  
Switches  
RACOR  
Frogs, Etc.

GENERAL OFFICES—HILLBURN, NEW YORK

Chicago New York Superior, Wis. Niagara Falls, N. Y.  
Canadian Ramapo Iron Works, Ltd., Niagara Falls, Ont.**FRictionLESS  
SIDE  
BEARINGS**The Wine Railway Appliance Co.  
Toledo, O.

For detailed description see Car Builders' Cyclopedic, 1922 Edition.

**JOS. E. NELSON & SONS**

General Contractors

**RAILWAY BUILDINGS  
RAILWAY WATER SERVICE**

3240 SOUTH MICHIGAN BLVD.

CHICAGO

**FALLS HOLLOW STAYBOLTS**made 50 years by an exclusive staybolt mill. If you want IRON  
THAT WILL NOT SPLIT and a cylindrical hole that admits a  
3/16" gauge, use FALLS HOLLOW staybolts.  
LONG ENDURING, SAFE, ECONOMICAL, NO MORE WELD  
TROUBLES—get in the procession under the new slogan:

100% SATISFACTION!

Bars or finished stays. Quality and workmanship guaranteed.

**FALLS HOLLOW STAYBOLT CO.**

21 E. PORTAGE ST., CUYAHOGA FALLS, OHIO

**Ashton High Grade  
Pop Valves—Steam Gauges**the quality standard for over 40 years  
Exclusive features insuring greatest  
efficiency and durability**THE ASHTON VALVE CO.**  
New York, Boston and Chicago**ELWELL-PARKER**

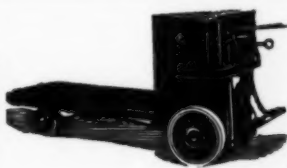
Electric

**TRUCKS AND TRACTORS**Platform, Lift Elevator, Crane and 3 or 4  
Wheel Tractors for Shop, Freight and  
Passenger Terminal.**The Elwell-Parker Electric Co.**

"Pioneer Builders Electric Industrial Trucks"

Cleveland, Ohio, U. S. A.

Offices in All Principal Cities

**LOUISIANA RED CYPRESS COMPANY**

New Orleans, La.

**DEPENDABLE**Cypress—Tupelo—Hardwoods—Yellow Pine and  
West Coast Products

Ties, Railroad Timbers and Car Material

**MUDGE MOTOR CARS**

Trailers

Push Cars

**Pressed Steel Wheels  
Mudge & Company**Manufacturers—Railroad Equipment  
Railway Exchange Bldg. - CHICAGO**PASSENGER CAR SPECIALTIES**Two Flexolith Composition Flooring, Two National Standard  
Roofing, Two National and Universal Steel Trap Doors, Two  
Trap Door Locks, Two Tucor Mineral Insulation, Two  
Besto Quilt Hairfelt Insulation, Two Steel Preservative,  
Two Imperial and Universal Car Window Screens, Two Brown  
Weather Strips, Two Metallic Steel Sheathing.**TUCO PRODUCTS CORPORATION**36 Church Street New York  
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Boston Dallas Washington, D. C. MontrealAsbestos and Rubber  
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Asbestos Insulating  
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In Use by 281 Companies  
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In Use by 205 Companies  
Both Made by the

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## Improved LUBRICATION for Every RAILROAD REQUIREMENT

The Franklin Railway Oil Co., Franklin, Pa.

See page advertisement in December 6 issue

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Cast Iron Smoke Jacks for Engine Houses  
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MULE-HIDE Insulating Paper for Refrigerator Cars.  
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30 cu. yds. Level Full;  
43 cu. yds. Normal Loading  
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with corrugated corners which permanently prevent admission of dust, cinders, rain, etc., to vestibule.

This Exclusive Construction Made and Sold Only by

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BUY  
SNOW  
SWEEPER  
RATTAN  
NOW

**Heywood-Wakefield**

REG. U.S. PAT. OFF.

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Engines  
Trailers



Pressed Steel  
Wheels  
Push Cars

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for Locomotive and Car Work

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DETROIT SEAMLESS STEEL TUBES CO.

DETROIT

MICH.

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of

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For Every Class of Service

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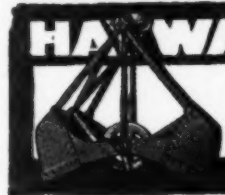


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For detailed description, See Car Builders' Cyclopaedia, 1922 Edition

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Clam Shell, Orange Peel, Electric Motor, and  
Drag Scraper Buckets for all excavating, dredg-  
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Car Sills, also Car Material

See advertisement in issue of December 13, 1924, Page 6

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Cotton and Wool Waste

Manufacturers of

Wiping and Packing Waste  
For Railroads, Steamships, Machinery, etc.  
INDIAN ORCHARD, MASS.

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Bradford Draft Arms

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Joliet Truss Rod Brake

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Beams

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PUTS AIR TO WORK

A complete line of efficient and reliable HEATING AND  
VENTILATING APPARATUS for terminals,  
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Plain or Rock Surface Roofing for Buildings. Asphalt  
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INSULATING PAPER FOR REFRIGERATOR  
CARS. Cotton Membranes for Concrete Waterproofing.

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will help you sell it.

TRY IT FOR RESULTS

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Quality and Workmanship Guaranteed

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Chicago

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Locomotive Terminals  
Power Plants  
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&  
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Engineers

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Industrial Plants  
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INVESTIGATIONS AND  
VALUATIONS  
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Cement.  
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Cinder Handling Plants

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you to use

space  
in this Directory

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INSPECTION OF  
RAILS, STRUCTURES, CARS, LOCOMOTIVES AND ALL  
RAILWAY MATERIAL

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gets results.

Experience has proved this.

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By using a small card in the Professional Directory at a nominal cost, you will reach almost every important Railway Officer. The men interested in the professional service you have to offer. Take advantage of this opportunity and keep your name before them for ready reference.

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Help and Situation Wanted advertisements appearing in this Department are payable in advance at 5c. a word an insertion, and 5c. per word for eleven words in address. Minimum charge \$1.00 an insertion. Display Help and Situation Wanted advertisements \$3.00 a column inch (1" deep x 1 1/2" wide) an insertion. For Sale and other Classified Advertisements \$3.00 a column inch (1" deep x 1 1/2" wide). Any number of inches may be used. Copy should be in the New York Office of the Railway Age, 30 Church Street, by Saturday noon to insure insertion in the following week's issue.

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**SALARIED positions, \$2,500 to \$25,000 upward; executive, technical, administrative engineering, manufacturing, professional, managing, financial, etc., all lines.** If you are qualified, and receptive to tentative offers for a new connection you are invited to communicate in strict confidence with the undersigned who will conduct preliminary negotiations for such positions. A method is provided through which you may receive overtures in confidence, without jeopardizing present connections, and in a manner conforming strictly to professional ethics. Send name and address only; preliminary particulars will be sent without obligating or compromising you in any way. R. W. Bixby, Inc., 402 Lockwood Building, Buffalo, N. Y.

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**TECHNICAL** graduate, several years on four prominent Eastern railways, in mechanical, signal and engineering departments. Thirteen years sales engineer. Now power engineer with road installing train control. Wants sales position railway supply field, preferably East. Address Box 673, RAILWAY AGE, 30 Church Street, New York City.

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FOR QUICK  
RESULTS

If you are looking for a position, or in need of a man, put your advertisement in this Classified Section.

## Usable Car Parts

## For Sale for

100,000 lb. Capacity Freight Cars  
80,000 lb. " " "  
60,000 lb. " " "  
50,000 lb. " " "

Good Assortment Always on Hand. Very Reasonably Priced.

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118 S. Dearborn St., Chicago, Ill.

Buyers of Old Freight Cars,  
Old Locomotives, Rails,  
Scrap Iron, Old Plants, etc.

"Why Not Ask Briggs & Turivas for Their Prices?"

SWITCH  
ENGINES

Some real ones at  
real bargain prices.

**ZELNICKER** in ST. LOUIS

What else do you need?

## FOR SALE AT A BARGAIN



**TWO GASOLINE OPERATED CARS—\$3,000 EACH**

Formerly operated on the  
**NORWALK & SHELBY R. R. CO. OF OHIO**  
42 Passenger—Baggage Compartment—Lavatory  
For Specifications Address

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NEW YORK · JERSEY CITY · PHILADELPHIA · HAMILTON, O.



92-Ton Consolidations; 21 x 28"; 38,000-Pound Trac. Power.

OVER HALF A MILLION DOLLAR STOCK OF EQUIPMENT OWNED BY US,  
REBUILT IN OUR OWN SHOPS, AND READY FOR IMMEDIATE  
SHIPMENT.

Locomotives 24", 36" and Standard Gauge, 6 to 100 Tons in weight. Red and  
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(Est. 1889)

Main Offices and Shops: ATLANTA, GA.

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Let the Get Together Department act as your  
silent salesman in helping you turn your idle  
used equipment into cash.

Rodger Ballast  
Hart Convertible Cars

STEEL UNDERFRAME

Capacity 50 Tons. Length 41 Feet

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**DO YOU KNOW** you cannot afford to miss the opportunity to own some of these cars at the low price we will sell them to you?

Do You Know  
What They Are?

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You can buy or you can rent



Write or wire us for our prices

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Rails, Locomotives and Cars

122 South Michigan Avenue, Chicago, Ill.

New York

St. Louis

Pittsburgh

San Francisco

# BUYERS INDEX

For location of advertisements of manufacturers listed in the Buyers Index, see Alphabetical Index on the last white page.

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Carnegie Steel Co.  
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National Malleable and Steel Castings Co.  
Russell, Burdall & Ward  
Bolt & Nut Co.  
Ryerson & Son, Joseph T.

Bolts, Patch.  
Falls Hollow Staybolt Co.

Bolts, Track.  
Bethlehem Steel Co.  
Illinois Steel Co.

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Manning, Maxwell & Moore, Inc.

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Davis Brake Beam Co.

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Chicago Railway Equipment Co.  
Davis Brake Beam Co.

Brake Forgings, Pins, Levers, Etc.  
American Steel Foundries.  
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Schaefer Equip. Co.  
Steel Car Forge Co.

Brake Heads.  
American Steel Foundries.  
Brill Co., J. G., The.  
Chicago Railway Equip. Co.  
National Malleable and Steel Castings Co.

Brake Jaws.  
National Malleable and Steel Castings Co.  
Schaefer Equipment Co.  
Steel Car Forge Co.

Brake Shoes.  
American Brake Shoe & Fdy. Co.  
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Buckeye Steel Castings Co.  
Fort Pitt Malleable Iron Co.  
Railway Materials Co.  
Standard Brake Shoe & Foundry Co.

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Westinghouse Air Brake Co.

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American Steel Foundries.

Brakes, Electric.  
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Brakes, Hand.  
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American Bridge Co.  
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Browning Co.  
Industrial Works.  
McMyler Interstate Co.  
Orton & Steinbrenner Co.

Buckets, Grab.  
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Brown Holsting Machy. Co.  
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Industrial Works.  
McMyler Interstate Co.  
Orton & Steinbrenner Co.

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Westinghouse Air Brake Co.

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Bulldozers.  
Ryerson & Son, Joseph T.

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Cables, Electric.  
American Steel & Wire Co.  
General Electric Co.  
Kerite Insulated Wire & Cable Co.

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Car Ends, Steel.  
Chicago Cleveland Car Roofing Co.

Car Lighting Equipment—(See Lighting Car Equipment).

Carlines.  
Chicago Cleveland Car Roofing Co.  
Hutchins Car Rfg. Co.  
Standard Ry. Equipment Co.

Car Material, Wood.  
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Louisiana Red Cypress Co.  
Stephens Lumber Co.

Car Parts, Second-Hand.  
Briggs & Turivas.

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Morton Mfg. Co.

Car Wheel Boreers.  
Manning, Maxwell & Moore, Inc.

Cars, Ballast.  
Bethlehem Steel Co.

Cars, Dump.  
Bethlehem Steel Co.  
Clark Car Co.  
McMyler Interstate Co.

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Ralston Steel Car Co.

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Cars, Shapes Pressed Steel.  
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Jordan Co., O. F.

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Castings, Grey Iron.  
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National Malleable and Steel Castings Co.  
P. & M. Co., The

Castings, Steel.  
American Locomotive Co.  
American Steel Foundries.  
Bethlehem Steel Co.  
Buckeye Steel Castings Co.  
Edgewater Steel Co.  
McConway & Torley Co.  
Standard Brake Shoe & Foundry Co.  
Standard Steel Works Co.  
Union Spring & Mfg. Co.  
Union Steel Casting Co.

Castings, Steel Vanadium.  
Union Steel Casting Co.

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Chemists.  
Dearborn Chemical Co.  
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Bullard Machine Tool Co.

Cinder Handling Plants.  
Roberts & Schaefer Co.

Circuit Breakers.  
General Electric Co.

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Ryerson & Son, Joseph T.

Clamps, Guard Rail.  
Q. & C. Co., The

Clamps, Hose.  
National Malleable and Steel Castings Co.  
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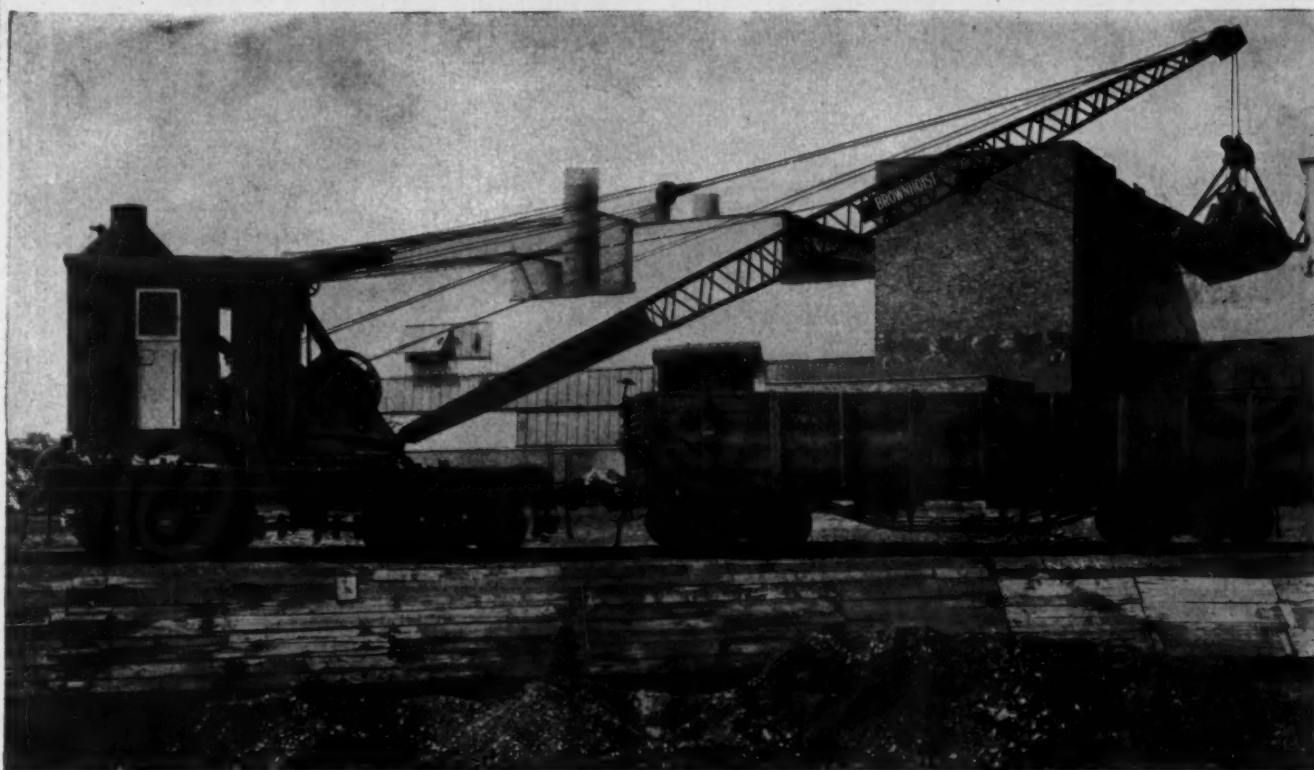
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